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ABSTRACT

Drafted for the Learning Technologies for Basic Education project, this document assembles case studies which provide an overview of.multichannel learning, or reinforce learning through the use of several instructional paths and various media including print, broadcast, and online. Through the cases, multichannel learning is depicted as an educational trend which is becoming socially and geographically widespread. The first section discusses the "building blocks" of multichannel learning in three essays: (1) "The Case for Multichannel Learning" (Stephen Anzalone); (2) "The Conceptual Foundations for Multichannel Learning" (Juliet SF. Chieuw & John K. Mayo); and (3) "Can New Technologies Lower the Barriers to Quality Education for All?" (Jan Visser). Cases in the second section concentrate on "pressure points in achieving education for all," specifically: (4) "Multichannel Learning for Nonformal Education in Developing Countries" (Tony Dodds); (5) "The Challenge of Open Secondary Education: Demand and Models" (Paud Murphy); (6) "Multichannel Solutions for Female Education: Focusing on Learning" (Andrea Bosch); and (7) "Multichannel Learning at the Community Level" (Michael Laflin and Micael Olsson). Section 3 is devoted to descriptions of multichannel learning applied in various situations or locales: (8) "Multichannel Learning: The Case of National Open School, India" (M. Mukhopadhyay); (9) Multichannel Learning: The Philippines Experience" (Minda Sutaria); (10) "South Africa: Designing Multichannel Options for Educational Renewal" (Stuart Leigh and others); (11) "Multichannel Approaches in the Multigrade Classroom" (German Vargas); and (12) "Dominican Republic: From the Margins to the Mainstream" (Elizabeth Goldstein and Altagracia Diaz de De Jesus). (BEW)

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Multichannel Learning: Connecting All to Education

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Multichannel Learning:

Connecting All to Education

Edited by Steve Anzalone

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FOREWORD

Some have described multichannel learning as a case of old wine in new bottles. First, there is nothing wrong with old wine, especially if you have a case of it. Second, it is true that multichannel learning draws on some tested and successful strategies. Many of the processes of education and communication that have improved the quality of learning are used in multichannel learning. But we believe that the concept does signal a distinct approach for designing educational programs that will be qualitatively different from education typically provided for children and adults.

Multichannel learning approaches elevate learning to the top of the list of social investments that a society can make. We are saying that it is the opportunity to learn, to acquire new knowledge and skills, that allows people to earn more, to participate in local governance, and to control their own lives. This process continues throughout life, and the systems that we contemplate when we talk of multichannel learning must be both durable and susceptible to evolution and growth as circumstances dictate or opportunities permit. Learning fundamentally determines quality of life, and the systems that deliver the opportunity to learn are fundamental social institutions.

Because not everyone learns in the same way or at the same time, multiple channels for learning are more efficient than single channels. We talk of channels as points of connection to learning, and we are thoroughly eclectic in choosing how to connect. We see value in the formal primary school but believe that multichannel learning can improve its practices. We also see multichannel learning offering a way back into the mainstream of education for those who cannot attend school. Multichannel learning will use any combination of systems to provide effective and affordable access to knowledge and skills.

Finally, multichannel learning focuses its attention on the process of how the learner interacts with the channels, looking at how the learner uses these channels both when the connection is first made and later as the new knowledge and skills are assimilated into the learner's life. This is the least understood element of multichannel learning, and technology is only now beginning to make it a practical possibility. Conceptually, an encyclopedia mounted on a multimedia computer system with gigabytes of hard drive and several CD ROM disks is the clearest metaphor for the multichannel package, where the learner controls the direction of the process and the resources are so vast that almost any combination of learning style and content is possible. But imagine if, in addition to the technological capabilities provided by such a system—sound, text, graphics, video clips, e-mail, and access to the most creative instructional minds available—one were to provide a sensitive teacher who would motivate and evaluate the learner's progress. And imagine if they all came together not once but again and again. Think how we might learn! In the real world, our challenge is to enlist all of the channels that are available to learners of all ages in the remotest of villages and to use them creatively and interactively to connect with people's drive for knowledge and skills.

This collection of case studies looks at worldwide experience in doing just that. Multichannel learning is not a flashy new educational fix. It gathers together in a new way, and under one name, some rather functional perspectives and successful practices on how to provide learning for all. This book is the result of a long and fruitful collaboration between the LearnTech Project, sponsored by the United States Agency for International Development, and the International Multichannel Action Group for Education (IMAGE). We appreciate the efforts of those who contributed to this collection, as well as the many other people who have helped nurture the concept of multichannel learning.

Michael Laflin	Reidar Roll
Director, LearnTech Project	Secretary General, IMAGE

Multichannel Learning:
Connecting All to Education

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The Building Blocks of Multichannel Learning

1

The Case for Multichannel Learning

Stephen Anzalone

> To serve the basic learning needs of all requires more than a recommitment to basic education as it now exists. What is needed is an "expanded vision" that surpasses present resource levels, institutional structures, curricula, and conventional delivery systems while building on the best in current practices. New possibilities exist today which result from the convergence of the increase in information and the unprecedented capacity to communicate. We must seize them with creativity and a determination for increased effectiveness.
>
> World Declaration on Education for All

The vision, the commitments, and the strategies adopted by the 1990 World Conference on Education for All (Jomtien, Thailand) continue to point us in important directions for the development of education throughout the world. The imperatives that led to the Conference are no less real today. The spirit of Jomtien, meant to focus and animate an agenda of activity leading into the new century, has not died. As we reach a point midway through the decade dedicated to concerted action toward achieving education for all, it is time to reaffirm basic principles, renew resolve, and reassess priorities for the next five years and beyond.

Five years after Jomtien, we have not come as far as we had hoped. Prospects look bleak for achieving a minimum standard of basic education throughout the world by the end of the century. We find, for example, that in 1990, when the World Conference took place, 128 million children were not enrolled in school. By the year 2000, this number is likely to reach 162 million[1]. About two-thirds of children not enrolled in school are girls. This is of special concern in view of the evidence that education for women and girls has such a strong impact on the well-being of families and societies.

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[1] *Education for All: Status and Trends. 1993. Paris: UNESCO.*

The obstacles to increasing opportunities for basic education have proved formidable in the years following Jomtien. It has not been a time favorable for accelerating the development of education and human capacity. Economic growth has lagged in many parts of the world. Population growth, on the other hand, has remained unchecked, putting greater pressure on the ecosystem and on resources for education and other social services. Catastrophes of all kinds, often leading to war, hunger, disruption of economic and social life, and the crumbling of national infrastructures, have devastated communities and nations throughout the world. Ethnic and religious differences have been tearing some countries apart. High levels of debt and military expenditure have constrained investment in development. For these and other reasons, only about 12% of countries have been able to increase spending on basic education following the Jomtien Conference. International assistance in support of basic education has fallen short of expectations and may greatly diminish in the years ahead—hitting hardest the countries with the longest way to go toward achieving education for all.

Education for all is not just about numbers. The Jomtien Declaration committed us to an expanded vision of basic education—with greater attention to be placed on improving the environment for learning and on learning itself. As Barber Conable, former President of the World Bank, told delegates in Jomtien, "schooling without learning makes no sense." And it is hard to find evidence of significant improvement in educational quality in the places where it is most needed. Although comparative international data on educational quality are hard to come by, those of us who visit schools in developing countries still see too many classrooms where very little learning is taking place. Strategies to improve educational quality remain narrow and ineffective. Too frequently, they fall short of the door of the classroom and view quality as provision of a few key inputs, such as delivery of textbooks to schools, tinkering with the curriculum, and provision of modest increments of in-service teacher training. These strategies have failed to lead to improved levels of educational quality, or even to levels of minimum educational quality. Where educational vision and policy fail to pay sufficient attention to how education is delivered, to the dynamics of teaching and learning, the returns on investment in education for all are likely to be disappointing.

The Changing Agenda of Education for All

The forces that caused the Jomtien delegates to adopt an expanded vision of education have proved to be durable, perhaps even gaining in velocity. If the *World Declaration on Education for All* were to be debated today, there would be good reason to push for expanding the vision even further.

Educational systems and institutions have been adept at producing mission statements that depict their agenda in the most idealistic of terms. Education everywhere aims at identifying the uniqueness in every individual, addressing the needs of the whole person, and seeking to assist everyone in reaching full potential. The rhetoric of mission statements of educational institutions is perhaps no less grounded in reality than those of corporations and other organizations. Still, for years, much lip service has been paid to learning as distinct from other aspects of the educational enterprise. When mission statements are put aside and education gets down to business, real attention, policy decisions, and budgetary allocations do not really aim at learning but rather at enrollments, the school calendar and daily schedule, what the syllabus should contain, which textbooks should be used, what qualifications teachers should have, how much they should be paid, and so on. Learning becomes a by-product of these decisions.

The World Conference on Education for All marked a moment when the international educational community acknowledged that learning was not something necessarily taking place as the result of investments in education—and that it ought to be. In the five years since Jomtien, the focus on learning has become even more imperative. We continue to learn more about what learning is and how it might be assisted. We are finding better ways to measure learning and getting better evidence that there is often little relation between what is meant to be learned, what is taught, and what students actually learn. In many developing countries, even greater attention needs to be paid to learning outcomes and not just managing the ledger of educational inputs.

Since Jomtien, the world has continued to change in a rapid manner, bringing diverse challenges to education and further transforming the traditional playing field of education. Market economies replace command economies, larger national entities fragment into smaller ones, dictators lose hold on power, countries face new waves of immigration, economies face new competition, industries embrace new technologies, and large numbers of workers require retraining. All kinds of learning are demanded for societies to readjust to the pace of change. The old playing field with its traditional clientele, organization, content, and delivery systems is increasingly obsolete. Some of these issues and their implications for learning are treated in more depth by Jan Visser in chapter 3 in this book.

Educators face several key challenges in the last half of the decade following Jomtien. First, how do we improve and extend conventional systems of basic education to meet the needs of populations currently not well served or bypassed by these systems entirely? Second, how do we organize and deliver services for populations whose needs have taken on a new urgency? This includes the millions of new immigrants as well as refugees and displaced persons—needs vary from learning how to rebuild shattered lives and communities to acquiring the skills to function in new economic settings. This also includes the population of preschool children. The importance of social and intellectual development and emotional care during the first five years of life is being increasingly recognized, as more and more the boundaries of basic education are being extended before and beyond primary school. (The challenges of responding to increased demand for secondary school education are discussed by Paud Murphy in chapter 5.) Third, lifelong education has gone from being a kind of social "extracurricular" activity to being a vital part of the educational agenda. The relationship between education and work is evolving quickly. Entry level skill demands for many jobs are increasing rapidly. Industries and enterprises appear and disappear in the face of stiff global competition. This places a premium on education and training as no longer a one-shot deal but something to be done periodically. The challenge to educators is to find ways that this can be done quickly, economically, and effectively. Fourth, the convergence between "the increase in information and the unprecedented growth in the capacity to communicate" observed at the time the *World Declaration on Education for All* was adopted has developed rapidly during the past five years. The connections linking countries, organizations, and persons to one another and to sources of knowledge are quickly multiplying. Educators need to be able to sort out which of these connections are educationally productive, what information is valuable and what is junk, and what information tools can be harnessed in cost-effective ways to achieving education for all. Fifth, we need to promote education and address the new challenges in a context where resources for education and learning must be found from new sources. Increasingly, central governments are finding themselves unable or unwilling to raise revenues through taxes to support education. The extent to which communities, corporations, local organizations, and individuals are willing and able to assume a greater role in expanding and improving educational opportunities will vary from place to place. But in the years ahead, it is in these new arenas where the educational agenda will be hammered out.

Whence Multichannel Learning

One of responses to the call from Jomtien has been a discussion and the building of an international partnership around the concept of *multichannel learning*. The concept reflects a convergence of several things

- the interest that ensued around the notion of the *third channel* put forward in the Jomtien discussions by then UNICEF Executive Director, James Grant. The third channel refers to the unplanned array of informal learning experiences coming through the use of traditional and modern means of communication;
- the desire on the part of distance education and open learning institutions and networks to take part in the Education for All initiative and to examine strategies that would effectively address the special challenges presented when dealing with basic education, particularly in developing countries;
- a recognition that sometimes distance is not always an issue and that strategies for improving education often involve conventional learning environments;
- an acceptance that methods and lessons learned in the area of development communication have importance for improving the reach and effectiveness of programs of basic education;
- the growing success of using appropriate educational media in basic education accompanied by an appreciation that effective use of media often comes about in combination with other educational inputs and processes; and finally,
- an accumulation of experience on the part of educators in developing countries in fashioning innovative approaches to basic education.

The concept of multichannel learning emerged from an extensive international conversation among educators, communicators, and development professionals. The name may be new, but the components and some good examples of multichannel learning have been in the making for many years. The term multichannel learning is appealing for some and off-putting for others. What matters are whether its principles are sound and whether the partnerships formed around these principles lead to the design and implementation of programs that more broadly and more effectively address the educational challenges mentioned above and throughout this book.

Multichannel Learning in Focus

Multichannel learning is a design and implementation strategy. It is not an explanation of how learning takes place or a prescription of what should be learned. Multichannel learning aims at identifying the means to integrate and reinforce learning that takes place in educational programs in and out of school. It seeks to strengthen educational interventions, within the constraints of feasibility and cost-effectiveness, by combining a wider range of delivery options than is typically found in existing programs. Multichannel learning seeks to more thoroughly engage students in the learning process. It seeks to take advantage of what is presently known about designing effective instruction, teaching students at a distance, developing media materials, and using community resources as a part of instruction.

Multichannel learning builds upon the idea that learning takes place through a great variety of interactions between the learner and the outside world. These interactions commonly take place along different paths to learning, which are described as learning channels. Learning channels may also be described as those persons and things that serve as mediators of learning.

Multichannel learning is founded upon the conviction that unless there is substantial reinforcement of skills acquired and diversity in the learning channels used, the chances for skills to endure are not strong. In countries that are able to afford rich learning environments, students in school gain knowledge through a great variety of learning channels. Similarly, this learning is reinforced and extended through a large and growing array of learning channels outside of school. In poorer countries, this may not be the case. There are few learning channels operating in the classroom, and opportunities for reinforcement through daily living are few. With the uneven spread of communications and other technologies and resources that assist learning, the educational opportunity gap between the rich and the poor seems to be widening.

Multichannel learning approaches are built upon an examination of the various paths that connect or could connect the learner to sources of knowledge, skills, and information. Multichannel learning proceeds from the premise that the chances for successful learning and transfer of what is learned to situations encountered in daily life are improved when education makes use of more than one learning channel and that learning channels are used in ways that reinforce one another. Learning channels include teachers or facilitators, other learners, family members, others in the community, social experiences, and educational materials of all kinds. Learning channels also include the various means of informal learning used to convey development-related messages, including posters, flyers, buttons, and media spots. Learning channels connect learners to knowledge, skills, and information found in the immediate learning environment and the community or delivered from a distance through various communication media.

Multichannel learning seeks to build on and build out from educational programs and practices already in place. It promotes more effective or more accessible alternatives within established educational systems rather than as second-class rivals to them. This intention can be problematic where mainstream educational opportunities are themselves deficient in quality or lacking in relevance.

The term *learning channel* should not be confused with the narrower concept of *communication channel*, even though the use of communications is often part of multichannel learning. Similarly, the above discussion should make it clear that multichannel learning means something different than multimedia. Finally, multichannel learning does not divide education, as some suggest, into three "channels" (formal, nonformal, and informal). Rather multichannel learning sees formal, nonformal, and informal education as modalities and seeks to make use of learning channels that often cut across the boundaries between these modalities. Minda Sutaria's description of the Philippines Project No Drops in chapter 9 provides a good example of how this can be done successfully.

The above discussion is meant to be more of a conceptual framework than a fixed definition. The framework, which grew out of conversations with many people, is an evolving one. As the chapters in this book suggest, it is subject to different interpretations and articulations. These result from the variety of educational contexts and purposes to which the concept may be applied. Again, what matters is not purity or singularity of definition but whether the concept is useful in designing and implementing effective interventions.

Multichannel Learning: Conceptual and Strategic Issues

The description of multichannel learning given above gives rise to a number of issues that touch on what multichannel learning is and how it should be applied. These issues are likely to give rise to spirited debate. Five key issues and one person's position on them are offered below.

Issue 1. Is multichannel learning really just another name for open and distance learning?

Some might argue that the concept of multichannel learning is not needed, that multichannel learning is no different from what is called open and distance learning. In examining this issue, it should be noted that there is a great deal of congruence between multichannel learning and open and distance learning. But there are important differences as well.

Distance learning tends to be organized in packages or courses that can be delivered and used by learners who are unable to take part in conventional face-to-face learning experiences. Multichannel learning aims at broader learning, involves itself in a greater variety of learning environments and methods, and is packaged and delivered with greater flexibility.

Multichannel learning strategies are currently being used to improve education offered in the curriculum of conventional schools. These strategies involve channels, methods, and materials that often do not connect classrooms to distant sources of knowledge and instruction. Even when they do, multichannel learning looks at strengthening the role played by teachers in instruction. (Here, South Africa's experience is illustrative and discussed by Stuart Leigh, Gordon Naidoo, and Lebo Ramofoko in chapter 10. In many cases, multichannel learning strategies that aim at improving instruction in school subjects are being used to improve learning environments that can in no way be described as open. On the other hand,multichannel learning strategies are being used to address urgent but more informal learning taking place at home or in the community. Such learning is often not amenable to being packaged in formal courses. As chapter 7 by Michael Laflin and Micael Olsson illustrates, there is a menu of learning channels available for community-based learning that would be unfamiliar to most distance educators.

Issue 2. Should multichannel learning be driven by theory rather than by design and implementation concerns?

Multichannel learning, as mentioned above, is not a theory about how learning takes place or a prescription of what content should be taught and learned. Many will be uncomfortable with this and will insist that the instructional process should derive from a theoretical explanation of learning or the particularities of the subject matter content to be taught. Let it be said that multichannel learning is informed by the educational research that points to the importance of such things as active involvement of the learner in the learning process, motivation, time spent actively engaged in learning, practice and reinforcement, prior knowledge, situated learning, and so on. It is also informed by research in the area of communication and program and message design. What is different about multichannel learning is the belief that discussions around theories of learning or communication do not usually provide good starting points for designing and implementing effective educational programs, particularly in developing countries. Even in places where the theoretical literature is more widely available and more pertinent to the educational conditions at hand and where there are more resources available for use in designing programs, the leap from theory into practice often falls wide of the mark.

Decision makers and practitioners are likely to be better engaged in the process of educational improvement by looking at concrete and practical options for delivering education. Such a process begins by looking at learners and their connections with bodies of knowledge, information and skills, and a commitment to build upon what currently exists. It then looks at how in a value-added fashion learning could be strengthened by using more and varied learning channels to open up and animate the learning process. This will leave plenty of room for the discussions of what to teach or how to teach it in ways that are prompted by new research or social concerns. This discussion of the "what" is likely to be more fruitful if conducted after or at least concurrently with a wider and more careful consideration of "how to" delivery options.

Issue 3. Learning channels: Are more better?

Axiomatic to the notion of multichannel learning is the idea that the prospects for successful learning and transfer of what is learned to situations encountered in daily life are improved when education makes use of more than one learning channel and that learning channels are used in ways that reinforce one another. The axiom derives from observation of learning environments, particularly in developing countries, where one usually finds few paths to learning. Time is spent locked into the routines of copying text from the blackboard, listening to teachers' verbal renditions of information, and reciting and memorizing text from the blackboard or textbooks. Students proceed through a curriculum where factual information is approached as something to be covered rather than mastered. If students do not get it when "it" is given, odds are they have missed their chance. Even in better situations, where channels to learning are being more effectively used, things go wrong and the chances for learning are diminished. Teachers or students are absent, sometimes for long periods of time. Where high-quality instruction is provided through radio or television, broadcasts are sometimes not received clearly, devices break, and batteries are unavailable. Providing multiple channels increases the probability that learning can occur because it provides opportunities to learn when things go wrong. In learning environments where the connection of students to knowledge, information, and skills is tenuous, reinforcing use of a greater variety of learning channels offers the possibility for educationally productive redundancy. There is more than one chance or one way to "get it."

Approaches that use a greater variety of learning channels and that foster connections between these channels are important for another reason: We learn in different ways. Whether or not one accepts the idea of different learning styles or the existence of multiple intelligences, few would argue that human beings vary in the ways that they learn or in ways they find learning to be easier, faster, more effective, or more enjoyable for them. Addressing individual differences in classrooms of 30 or more students is not easy. Even in school systems with highly skilled teachers and small classes, as well as resources for curriculum flexibility, remedial or enrichment instruction, quality assessment, and various aids to learning, instruction that effectively addresses individual differences or preferences in the way students learn is still the exception rather than the rule. In most classrooms in developing countries, addressing individual differences in a meaningful way is not a practical possibility. Still, there are ways to provide a greater variety of paths to learning that permit addressing some of the differences in the way students learn and the differences in experience and knowledge they bring with them to school. The experiences from Costa Rica, the Dominican Republic, India, the Philippines, and South Africa described later provide examples on how this can be done.

It will be impossible to conduct evaluations to prove the point that more learning channels are better than one or two or whether resources might be better invested in strengthening existing channels rather than adding new ones. It will be impossible to generalize from the various experiences with multichannel learning which combinations are the most robust for learning. But we believe that the practical sense of providing a greater variety and more imaginative combination of learning channels in educational interventions will be observable to educators who decide to apply multichannel learning strategies.

Issue 4. What should be the role of media in multichannel learning?

Technology was often a dirty word in discussions about education in developing countries. No longer. The potential of technology to improve educational quality and access is becoming more widely recognized, and successful experience in using technology to support basic education in developing countries is growing. The use of technology is likely to figure prominently into multichannel learning strategies.

We believe that the chapters in this book reflect a consensus on the role of technology in a multichannel learning approach to education. Technology provides one set of channels, but not the only one and probably not the most important one. Multichannel learning is an opportunity for those of us working in the area of educational technology to become more actively involved in the "what else" that is needed to make education effective.

As Tony Dodds (chapter 4) reminds us in his summary of the international experience with nonformal education, the use of technology offers the chance for multichannel learning approaches to reach large numbers of people and thereby become a serious factor in national development. We would add to this that technology also provides the practical means to transport quality education to learning environments that might not otherwise be so visited.

Multichannel learning is a framework for sensible discussion on the use of technology to assist the learning process. There is a need to keep good sense alive in these discussions. There are still many science fiction scenarios loping across the globe that promise educational revolutions about to explode or that suggest that investments in new pieces of educational technology will turn a struggling economy into a Korea or a Singapore.

On the other hand, we should not choke ourselves with good sense. Multichannel learning is about opening options, not closing them. Technology can be a catalyst for change even when it may not provide the most appropriate instrument for delivery of education. Developing countries have the right to participate in the unfolding experience with new technology. They have the right to be connected to the file servers and the gateways of the 21st century. How this can be accomplished in a manner that contributes rather than detracts from providing education for all is a question that probably merits at least one more book.

Issue 5. How should multichannel learning seek to connect communities to the mainstream?

The chapters in this book, particularly those describing the experience in the Philippines, Costa Rica, and the Dominican Republic and chapter 12 by Laflin and Olsson and chapter 4 by

Dodds, show various approaches to involve the community in education and make use of sources in the community as channels for learning. The role of the community in education will grow as central governments are impelled, either by desire or because of financial pressure, to decentralize authority over the provision of education. This raises many questions about how responsibility for education will be divided and how education will be delivered. Will education controlled and managed closer to home be more or less responsive to the needs of the learner? Will more local systems of learning result in a more inequitable distribution of benefits and serve to prevent many from entering the mainstream of social opportunity?

Multichannel learning offers the possibility of assisting in getting communities involved in education. German Vargas's discussion of multigrade classrooms in Costa Rica provides a good example of how learning channels in the community can both enrich learning and extend the reach of education. These are paths that are too often overlooked and can be incorporated into education with little or no cost. Moreover, Costa Rica's experience provides a good example of how radio programs developed as a learning channel on a national scale can be effectively integrated with community channels.

But the interest in community-based learning channels and the desire to avoid the grip of tradition and bureaucracy of national systems of education should not give rise to the desire to develop pristine but unsustainable models of learning on the fringes of national educational experience. Moreover, in our desire to reach the unreached, we must not forget those who are not being reached very well by mainstream educational opportunities. Building programs outside the mainstream may sometimes be necessary and may be the only practical way to develop and test an innovation. But paths to learning should not lead to dead ends—they should connect the learner to the best possibilities available for continued learning.

A Final Thought

Only time will tell whether the new and broader configuration of capacities under the umbrella that is called multichannel learning will spark educational imagination, stimulate new and better partnerships, and result in more effective learning. But as immense as the challenges are in making significant progress toward education for all, the chapters in this book provide a basis for hope and a sense of practical direction for designing better learning opportunities for those who currently are being shortchanged.

2

The Conceptual Foundations of Multichannel Learning

Juliet SF. Chieuw and John K. Mayo

Since multichannel learning is a relatively new term within the development lexicon, we approach it inductively, drawing upon existing theory and practice. In doing so, we concentrate on insights and lessons from three interrelated domains: participatory learning, development communication, and social mobilization.

Participatory learning is a process through which people seek to obtain new knowledge and greater mastery over the economic, social, and political forces which shape their lives. Such learning requires heightened civic awareness and commitment at the local level, in addition to centrally organized dissemination and diffusion initiatives.

Three decades of work in development communication have taught us the value of audience research and of diverse approaches to the acceleration of learning and social change. Experience from around the world illustrates the catalytic roles communication media of all kinds have played in enhancing learning.

The experience of social mobilization campaigns in numerous countries suggests that for sustainable development to occur there must be strong pressure for change from both the center and periphery of developing societies. In other words, committed national leaders as well as extensive citizen action at the grassroots are required to bring about lasting change.

As succeeding sections will argue, multichannel learning is best seen as a synthetic term, one based on an amalgamation of concepts and experiences culled from the three domains introduced above. Together, these domains provide a foundation for the new term and for many promising approaches to education and development.

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Participatory Learning

No Limits to Learning, a Club of Rome report published in 1979, provides an explication of "learning," a term that had become quite nebulous. With specific reference to developing nations, the report's authors, James W. Botkin, Mahdi Elmandjra, and Mircea Malitza, draw clear distinctions between "maintenance learning" and "innovative learning." Maintenance learning, the main purpose of most educational programs, they define as

> the acquisition of fixed outlooks, methods, and rules for dealing with known and recurring situations. It enhances our problem-solving ability for problems that are given. It is the type of learning designed to maintain an existing system or an established way of life (Botkin, Elmandjra, & Malitza, 1979, p. 10).

This pattern of learning reinforces the stability and status quo of every society. It is based on values and assumptions about the world inherited from the past.

Maintenance learning has been sharply criticized by the Brazilian adult educator, Paulo Freire, and others as a stifling form of "banking education," which treats learners as empty vessels passively waiting to be filled with information. Freire's critique also calls attention to the repressive consequences of most forms of state-sponsored education on society. Freire views today's schools as well as most other educational institutions as one-way, information transfer mechanisms. Such mechanisms and the pedagogies they embody, he argues, have little relevance or contextual meaning in students' lives. The result is a process which stifles expression, creativity, innovation, and change. Such forms of education oppress not only students and teachers, but also entire communities. In essence, they perpetuate what Freire terms "cultures of silence."

As an alternative, Freire proposes a pedagogy based on communication (Torres, 1989). Through "dialogues" of various kinds, adult learners are encouraged to become literate, to question, and ultimately to transform the social, economic, and political structures which govern their lives. Literacy in Freire's programs has become much more than the mastery of the reading and writing skills associated with maintenance learning. It is also a vehicle for self-expression, for critical thinking, and for social change. Through such critical reflection adult learners are encouraged to articulate and write their own words and, in so doing, communicate with the wider world.

Freire's perspective heavily influenced the *Educación Popular* movement, which took root in various Latin American countries in the 1970s. This movement emphasized the complementary nature of education and communication (Torres, 1988, 1989). The need for such complementarity was first noted by the Director-General of UNESCO, Rene Maheu, in 1967:

> education must lead to communication in the broadest sense of the term. There has frequently been a misguided tendency to differentiate between these two concepts. Actually, if education is to be equal to the demands life makes on it, education and communication are inseparable and complement each other.

Innovative Learning

Regrettably, maintenance learning in its various forms continues to predominate within the educational institutions of most societies. As we approach the end of the 20th century, such practices are unable to prepare people for rapid social technological change. The more holistic perspectives required for the next century require innovative learning, which Botkin and colleagues (1979) associate with

> the integration, synthesis, and the broadening of horizons. Its meaning derives from dissonance among contexts. It leads to critical questioning of conventional assumptions behind traditional thoughts and actions, focusing on necessary changes. Innovative learning advances our thinking by reconstructing wholes, not by fragmenting reality (p. 43).

Innovative learning is a process of preparing to deal with new situations. Its focus is on the future and on preparing individuals to learn in groups as well as on their own. It involves two essential processes: anticipation and participation (Botkin et al., 1979).

Anticipation is the ability to plan for the future. It entails foreseeing and preparing for contingencies, based on current trends and patterns. Peter Senge, in his book *The Fifth Discipline: The Art and Practice of the Learning Organization*, highlights much the same need for greater anticipation within today's business communities. According to Senge, innovative thinking enables people to perceive interconnections. Problems or issues do not arise in isolation; frequently they are linked in many ways and at many levels. By the same token, seemingly isolated actions often engender consequences that may not manifest themselves overtly, yet they exert powerful influences on communities and organizations. For this reason, Senge advocates learning which encourages looking at problems and opportunities from multiple perspectives. Indeed, most of the challenges we face today are inextricably connected; they defy expert solutions from any one field.

When set within such a systems perspective, learning assumes new meaning and purpose. In order to develop a holistic, system-wide view, it is critical to encourage input from as many sources, and through as many channels, as possible. Learning from this enlarged perspective also contributes to a society's health and vitality, by providing diverse voices a forum for articulation. Such a forum leads, in turn, to the "integration, synthesis, and the broadening of horizons."

Notions of dialogue, exchange, and networking, as well as the abilities to express oneself, to be heard, to question, and to be answered are all embedded in the Latin American concept of *communicación educativa* (Kaplun, 1992). This concept forms a conceptual bridge between the traditionally separate disciplines of education and communication. In the process of mastering basic skills and "problematizing" life's circumstances, the learner no longer acts as just a passive consumer of information. Rather, he or she assumes multiple roles—a sender as well as receiver of messages, a creator as well as a consumer of knowledge. In this fashion, learning becomes a creative process, and one which relies on a variety of information sources and channels.

Development Communication

Communication, like learning, has been conceptualized in many different ways. The traditional paradigm views communication as essentially a transfer or delivery process. Communication-as-transfer treats information as a commodity. As such, it can be transferred from place to place, retaining essentially the same meaning and applicability across time and space. Yet communication initiatives based on the notion of information as commodity have proven to have only limited effectiveness in bringing about sustainable behavior change (Redman, Spencer, & Sanson-Fisher, 1990). For example, the attempts of health educators to use the mass-mediated messages exclusively to promote desirable new behaviors have proven to have little effect (Hornik, 1988; Redman et al., 1990).

An alternative view of communication underscores the interactive processes through which individuals arrive at progressively richer understandings of themselves and their surroundings. In contrast to the communication-as-transfer model, communication-as-sense-making assumes that a great deal of information is bound by time and place, as well as by the perspective of its creator. For this reason, information has meaning to the individual only to the extent that it can be interpreted, understood, and applied by that individual according to his or her experience (Dervin, 1981).

Sense-Making

Conceptualizing communication-as-transfer versus communication-as-sense-making affects our understanding of learners—how they use information and what we need to know about them to communicate and educate successfully. Since time passes and needs change, people must continually make sense of their worlds anew. Thus, sense-making is a dynamic process, a continual seeking of understanding and order out uncertainty. By the same token, learners use information in a great variety of ways to meet their needs. They also pay closest attention to communication channels which are familiar to them and in which they have most confidence.

Based on the concept of people as sense-makers, and the notion of meaning as something derived from experience, persuasive messages must be designed according to a potential audience's existing knowledge and attitudes. Still, a variety of interpretations may accompany any message, because each individual's interpretation is unique. For the same reason, information-seekers benefit from exposure to multiple channels from which they can obtain information relevant to their situations.

Communication Planning

Decades of experience have taught planners that audience research is the *sine qua non* of successful campaign design and implementation. Typically, successful campaigns have included the following steps:

- meticulous assessment of the needs, goals, and capabilities of target audiences;
- systematic planning of all communication strategies and materials;
- selection of appropriate media based on audience expectations and experience, as well as cost;
- complementing the use of new media with interpersonal and traditional channels; and
- continuous evaluation and adjustment of project components.

In addition to understanding the target audience, engagement of representative members in as many planning, design, and implementation activities as possible has proven to increase the success of communication campaigns. Nine lessons culled from numerous development communication programs reinforce the notion of knowing and working with learners as much as possible:

- Planning requires collaboration with partner institutions in the community as well as at the broader policy level.

- Sustainable behavior change requires long-term continuity of resources and support.
- Short-lived communication campaigns are ineffective and can be harmful, because they exhaust the regular service delivery system and divert resources and energy from other programs.
- Local leaders and social networks exert powerful influence on the decisions and behavior of individuals.
- Hard-to-reach learners face special barriers related to physical access, limited exposure to media, inadequate information, conflicting cultural beliefs, or poor social support systems.
- Building institutional capacity, locally and nationally, has a long-term impact. (Adapted from AED, 1992, p. 23-27; McKee, 1992, p. 153-154.)

Roles of Mass Media

While exclusive reliance on mass communication to produce behavior change has rarely proven to be effective, the media are extremely important tools for raising public awareness. Robert Hornik's (1984) review provides an excellent summary of the different roles the media have played in a wide variety of development projects, including

- extending expert advice at low cost;
- institutional catalysts, facilitating institutional and political change;
- organizers and maintainers of change in resistant environments;
- equalizers of access and opportunity;
- quality enhancers;
- accelerators of interaction among geographic areas;
- legitimators of new development themes and policies;
- feedforward mechanisms, enabling people to express their views; and
- magnifiers of dependent or independent relationships.

Based on his review, Hornik derived four lessons for communication planners. The first is that there must be commitment to social change. Such commitment can be reflected in a variety of ways. The most critical is that mechanisms and resources to implement, maintain, and sustain innovation must be made available in a timely fashion.

A second lesson is that communication interventions must complement or be accompanied by other changes in the environment. Neither information alone nor change introduced in isolation can produce lasting effects. Because of the interconnectedness of social systems, behavior is "not easily changed in the absence of substantial change in the environment supporting the behavior" (Hornik, 1984, p. 338).

The third lesson is that sound instructional design must accompany the introduction of new communication media. As noted above, message design is a critical factor in any campaign's success. An appropriate selection and mix of media for any education or communication task is dependent on audience analysis and an assessment of the kinds of messages people are prepared to receive.

Finally, communication planners must monitor continuously what is happening in the field. Understanding the cultural conditions and disposition of one's audience is a necessary precondition to designing successful communication interventions. Knowing what is going on also means that the timing of activities is appropriate and not imposed by artificial deadlines. Hornik emphasized this point in the following way

> the importance of ripe circumstance, of right context, of making communication activities fit as a complement to other activities. What we have gained over these years is increasing knowledge of how to recognize ripe circumstance (and not-yet-ripe circumstance) and how to specify what other activities must be going on if communication is to be an effective complement (Hornik, 1984, p. 337).

While communication and education are often perceived as separate domains, we find within them an interesting convergence of key concepts. The view of audiences as dynamic, sense-making groups of individuals actively seeking information, reinterpreting that information, and using it in multiple ways is mirrored by the construct of learners as creators and communicators of knowledge and information. Just as people will not act on information that has no meaning in their context, neither will learners understand and apply new information when it is presented out of context.

Social Mobilization

Definitions of social mobilization emphasize different aspects of communication. Ling and Hewett (1992), for example, see social mobilization as encompassing a wide range of activities, including information collection and analysis, advocacy, community organization/involvement, and alliance building.

Due to the size and diversity of their intended audiences, social mobilization campaigns frequently are comprehensive and national in scope. McKee (1992) represents social mobilization within in a development communication model consisting of three concentric circles. The innermost circle involves advocacy. Advocacy is first required to establish an innovation as a national priority among important decision-makers. A wide range of public information and lobbying efforts may be required to secure political and social commitment, e.g., personal contacts, seminars, rallies, and other news-making events; promoting mass media coverage, etc. Advocacy in the early stages concentrates on the nation's leadership and the donor community.

The second circle encompasses specific social mobilization activities. The intent here is to build alliances at national, regional, and community levels. It is a process of fostering intersectoral collaboration and, ideally, community ownership. Partners typically include a broad range of government ministries, private sector organizations, NGOs, and religious groups. Innovations are widely diffused through social mobilization which relies primarily on interpersonal communication channels.

The outer and widest circle encompasses all forms of communication planning. Here the intent is to build mass involvement, utilizing all available channels. The most appropriate mix of communication channels is used to transmit messages tailored to people's needs, knowledge, and attitudes by the research process of identifying, segmenting, and targeting specific constituencies with particular strategies, messages, or training programs.

Keys to Effective Social Mobilization

What factors are critical to the success of social mobilization campaigns? Recent experience reveals a number of critical factors that determine success:

- Building on existing strengths in people and organizations. This requires knowledge of communities and their people. Planning of campaign events should coincide with the calendar of local events and activities.

- Mobilizing around concrete actions and activities so that people will be able to act upon information they receive. Messages must clearly communicate what kinds of specific actions people are expected to need to take, for what reasons, and with what consequences.

- Building an organic, integrated program, not an isolated project. All activities need to support and reinforce one another.

- Ensuring that the local communities "own" the campaign as much as possible. Community participation is critical. Too often social mobilization campaigns follow a hierarchical model in which change is merely mandated from above. Without community ownership, long-term change will not be achieved.

- Rapport and trust are indispensable. A climate of change must be encouraged without unduly threatening established authorities or stakeholders.

Community Participation

As noted above, a key determinant of successful social mobilization is the participation of communities. McKee defines community as an expanded base of allies including "heads of state and other political leaders, various ministries, district and local government authorities, community and, religious leaders, NGOs, service clubs, journalists, filmmakers, artists and entertainers" (McKee, 1992, p. 110). Social mobilization builds alliances in the broadest sense, so that a program, directed initially by a vertical chain of command, eventually becomes horizontal in ownership. As McKee (1992) points out, community participation constitutes

> an educational and empowering process in which people, in partnership with those able to assist them, identify problems and needs and increasingly assume responsibility themselves to plan, manage, control, and assess the collective actions that are proved necessary (p. 3).

Participation also represents a long-term investment in the buildup of community resources (Townsend and Gebhardt, 1992, p. 89) and a vehicle for unleashing a great amount of knowledge that may already reside in the community. It is a strategy for bringing collective experience to bear on creative problem solving. In so doing, it can strengthen community solidarity, forge a common memory, and produce a collective confidence among people in their abilities.

While sustainable change is extremely difficult without community participation, getting community members to set the agenda, prioritize problems, and make decisions on resource allocation has proven to be extremely difficult. The process of community involvement also can be costly and time-consuming, with the pay-off evident only in the long-term. Experience suggests that community participation is enhanced when the following conditions are met:

- Clarity of purpose. Development messages must be communicated in clear and specific terms. The time that participants devote to community activities must be perceived to be time well spent.

- Clarity of roles. Successful participation requires that people know what is expected of them. Productive roles emphasize individuals' unique strengths, willingness to contribute, and understanding of how benefits will accrue, to them personally as well as to their communities.
- Clarity of procedures and outcomes. Whereas program purposes and individual roles typically are socially negotiated arenas, specific innovations often are not. The mixing of oral rehydration solutions, for example, requires specific amounts of water, sugar, and salt. Too much salt could lead to tragic results, while too little may render the intervention ineffective and lead to an equally tragic outcome.

Without acknowledgment of these conditions, participation quickly dissolves, ownership by the community is thwarted, and efforts are wasted.

Implications for Multichannel Learning

Numerous lessons can be drawn from our review of participatory learning, development communication, and social mobilization. The three domains provide overlapping insights regarding *1*) the individual, *2*) the community, and *3*) the learning process. Together, such insights help to establish a conceptual foundation for multichannel learning.

The Individual

Across the three domains, the role of individuals has been amplified. In contrast to the familiar status of learners as mere recipients of information, the latter increasingly are seen as vital sense-makers and creators of meaning. Therefore, in thinking about what constitutes effective teaching, the starting point must always be the learner, not the information to be conveyed. Without the active engagement of the learner in the instructional/communication process, there can be little genuine communication and little, if any, meaningful change.

Effective learning occurs when it is built on people's existing knowledge, as well as their previous experiences, interests, and needs. Once learners are able and willing to communicate what they know—to friends, family, and fellow citizens—they may become agents of community learning, an essential aspect of development.

The Community

We have argued that learning takes place when information is contextualized, that is, when it has meaning and relevance within specific settings. Communities constitute a rich resource of information and knowledge exchange from which learners can profit and to which they can contribute. Traditional and modern communication channels are important tools in this process, helping learners to seek information, to generate their own knowledge, and to apply it within their communities. In this manner, individual learning both depends upon and nourishes community life.

Communication activities must be supported by concomitant changes in the environment; they cannot operate efficiently in isolation. Because most individuals live in communities which, in turn, form part of larger sociocultural systems, new individual behaviors are simultaneously new community behaviors. For this reason, concern for only individual learning, and not the context in which it occurs, is not enough. Involving as many community members as possible in the design, execution, and assessment of new learning opportunities promotes participation and ownership, increasing the probability that desired behavior changes will be sustained over time.

The Learning Process

Because attitude and behavior change are extremely complex and dynamic phenomena, flexible education and communication processes are required to initiate and sustain them. Massive communication inputs do not necessarily result in massive changes and, conversely, small inputs do not necessarily produce only small changes. Identifying the key leverage points and thresholds for change in different environments is critically important. Successful development communication and social mobilization programs reveal that communication channels, traditional and nontraditional, along with community participation, constitute powerful vehicles for change. Knowing how and when to use them depends most on the systematic identification and monitoring of audience members' attitudes, knowledge, and needs.

The three domains reviewed in this essay—participatory learning, development communication, and social mobilization—reveal striking similarities in spite of their distinct historical origins and jargon. Although development scholars and practitioners historically have tended to treat the domains separately, in reality they are quite complementary. In a like manner, multichannel learning offers us an integrated approach to understanding the relationships among education, communication and development. Such an approach *1*) focuses on individuals as sense-makers and creators of meaning, *2*) emphasizes the sociocultural contexts in and through which all learning and communication takes place, and *3*) recognizes that combinations of communication media are the best means available for increasing understanding and development.

REFERENCES

Academy for Educational Development. (1992). *HEALTHCOM: Results & realities: A decade of experience in communication for child survival.* Washington, DC: Office of Health Bureau for Research & Development, U.S. Agency for International Development.

Botkin, J. W., Elmandjra, M., & Malitza, M. (1979). *No limits to learning: Bridging the human gap* (Report to the Club of Rome). New York: Pergamon Press.

Dam, A. V., Sergio, M., & Peter, G. (1992). *Popular education in Latin America: Synthesis of the discussion themes* (Verhandelingen No. 50). The Hague, Holland: CESO.

Dervin, B. (1981). Mass communicating: Changing conceptions of the audience. In R. E. Rice & W. J. Paisley (Eds.), *Public Communication Campaigns.* Beverly Hills, CA: Sage.

Haddad, W., Colletta, N., Fisher, M., Lakin, M., & Rinaldi, R. (1990). *Final report, World Conference on Education for All: Meeting basic learning needs.* New York: Interagency Commission (UNDP, UNESCO, UNICEF, World Bank) for the World Conference on Education for All.

Hancock, A. (1992). Back to the future: Communication planning. *Development Communication Report, 4* (79), 1-6.

Hornick, R. (1984). Communication as complement to development. In Gerbner & Siefert (Eds.), *World communication.* New York: Longman.

Hornik, R. (1988). *Development communication: Information, Agriculture, and Nutrition in the Third World.* White Plains, NY: Longman.

Improvement Concepts Incorporated. (1993). *Local interagency community collaboration projects. Progress report: 1991-October 1992.* Tallahassee, FL: Author.

Kaplun, M. (1992). *A la educación por la communicación: La practica de la communicación educativa.* Santiago, Chile: UNESCO/OREALC.

Korten, D. C. (1980). Communication organization and rural development: A learning process approach. *Public Administration Review, 40* (1), 480-511.

Ling, J. C. S., & Hewett, A. (1992). *Social mobilization: A process model based on UNICEF's experience*. Paper presented at the 1992 annual meeting of the International Communication Association, Miami, FL.

Mayo, J., & Chieuw, J. SF. (1993). *The third channel: Broadening learning horizons*. New York: UNICEF.

McKee, N. (1992). *Social mobilization & social marketing in developing communities: Lessons for communicators*. Penang, Malaysia: Southbound.

Redman, S., Spencer, E. A., & Sanson-Fisher, R. W. (1990). The role of mass media in changing health-related behavior: A critical appraisal of two models. *Health Promotion International, 5* (1), 85-101.

Rice, R. E., & Atkin, W. J. (Eds.). (1989). *Public communication campaigns* (2nd ed.). Beverly Hills, CA: Sage.

Schramm, W., Coombs, P., Kahnert, F., & Lyle, J. (1967). *The new media: Memo to educational planners*. Paris: UNESCO/IIEP.

Senge, P. M. (1991). *The fifth discipline: The art and practice of the learning organization*. New York: Bantam.

Torres, R. M. (1988). *Discurso y práctica en educación popular*. Quito, Ecuador: Ciudad, Centro de Investigaciones.

Torres, R. M. (1989). *Educación popular y communicación popular*. Quito, Ecuador: Ciudad, Centro de Investigaciones.

UNICEF (1992). *Education for all: UNICEF's response to the Jomtien challenge*. New York: Author.

UNICEF (1992). *Report of AFH meeting, Amman*. Oxford, UK: Oxford Press.

World Conference on Education for All. (1990). *World declaration on education for all and framework for action to meet basic learning needs*. New York: Interagency Communication (UNDP, UNESCO, UNICEF, World Bank).

3

Can New Technologies Lower the Barriers to Quality Education for All?

Jan Visser

Any opinions expressed in this chapter are those of the author and not necessarily those of UNESCO. Parts of this chapter are adapted from internal UNESCO documents prepared by the author in 1994 and 1995.

One frequently hears the claim that new technologies will provide an important breakthrough in solving the educational problems of the 20th century. Similar claims have been made for decades, if not centuries. Yet there are almost 1 billion illiterate adults in the world; well over 100 million children quit primary school before attaining sustainable learning achievements; and many more privileged learners who do go to school and advance considerably on the formal educational ladder find that their knowledge is inadequate in today's society. Are these really problems technology can solve? What, if anything, is new? If technology can help, what should we seek to concentrate our efforts on? This chapter will not answer all of these questions. Rather, it will seek to raise awareness about them, put them in context, and provide food for thought.

Multichannel Learning and the Communication Process

Multichannel learning is a design option which aims at increased effectiveness in reaching the learner and facilitating the learning process. It considers a wider range of channels of educational communication than the choice of options typically found in conventional programs. As it is used here, the term "*communication*" refers to a process of exchange and shared processing of information among several participants. More specifically, the term "*educational communication*" applies when this process is designed to result in learning on the part of the participants.

In the context of educational communication, at least one of the participants provides prompts to learning and the other

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participants are the intended beneficiaries of the process. Traditionally, the former is referred to as the teacher, and the latter are called learners. However, within a multichannel learning conception, these roles should be seen as more flexible than in the conventional teaching/learning relationship. The roles may actually change during the process, and learning may take place on the part of all involved. All participants may be expected to provide prompts to learning.

It is relevant to note that in the above conception of educational communication the process goes beyond the simple transfer of information from one party to another, such as from a teacher to a learner. Information is considered dynamic; it is shared, enhanced, rerepresented, created, and recreated in the interaction between the participants. Dervin (1981) contrasts the "information-as-thing" idea characteristic of the former process with the "information-as-construction" concept inherent in the latter conception of communication. "Information has meaning only in the context of the constraints on human observing that created it. It is relative to its creator and meaningful only in that context" (Dervin, 1981, p. 75). It is therefore important, as Holmberg (1990) stresses, to look at communication as a twoway process of interaction between human beings and to distinguish between ways of using media that assume human interaction and those that do not. Forsythe (1986), quoted by Holmberg, refers to *generative* and *degenerative* effects of media use. According to Holmber (1990), "However valuable interaction with a computer program may be, it does not represent human communication" (p. 42).

In this chapter, learning will refer primarily to the activity through which human beings, either individually or collectively, prepare themselves for change. Acquiring information (knowledge of facts) is only a minor part of that activity. A much more important goal is the development of problem-solving skills, of the capability to apply knowledge and generate new knowledge in contexts different from the ones in which the initial learning took place—skills to operate *on* information rather than *with* information (Chang, Crombag, Van der Drift, & Moonen, 1983). The real challenge is therefore to devise communication processes that allow those who participate in them, to quote a well-known book title somewhat out of context, to go *beyond the information given* (Bruner, 1974).

This is particularly important when learning is expected to take place largely autonomously, such as in distance education contexts. Holmberg (1990) points out that, to ensure that the distant learner has more or less everything that is needed to accomplish the desired learning tasks, distance education courses are largely selfcontained. This tends to discourage the learner from consulting additional sources of knowledge and thus developing higher academic skills. While Holmberg voices his concern in the context of university-level distance education, these concerns holds equally true in other contexts and levels of learning that aim at generating meaning and require the learner to develop control over the learning process. These capabilities are relevant at all levels of education; certainly we cannot expect students to develop them easily at at the level of higher education if they have not already been initiated at the basic and intermediate levels.

Multichannel Learning and the Challenge of Technology

There are considerable expectations that new technologies will play an increasingly important role in opening up the learning environment and in making it accessible at all levels of education. There are numerous examples of such expectations. Although many countries may justly claim a record of unprecedented progress in increased enrollment in basic education in recent decades, there are still countless illiterate persons (not only in developing but also in industrialized countries) and unattended or inadequately attended youth. Conventional educational provisions have not been able to solve problems of equal access to even basic education. In addition, not all groups in society have equal access to education, especially women and girls. Where children do go to school, the poor of quality of schools often results in high degrees of wastage (dropout and repetition) and unsatisfactory or irrelevant learning achievements.

In March 1990, the World Conference on Education for All (WCEFA) was held in Jomtien, Thailand. It brought world leaders together to consider the these problems and possible strategies to address them. Among various other recommendations, the WCEFA emphasized the importance of "an 'expanded vision' of education that surpasses...conventional delivery systems." More specifically, it stated that

> All available instruments and channels of information, communication and social action could be used to convey essential knowledge and inform and educate people on social issues. In addition to the traditional means, libraries, television, radio and other media can be mobilized to realize their potential towards meeting basic education needs for all (Secretariat of the International Consultative Forum on Education for All, 1990).

During that same year, representatives African nations gathered in Arusha, Tanzania for a regional seminar on distance education. They expressed a similar commitment to explore the potential of alternative modes of educational delivery.

At their summit meeting on Education for All (New Delhi, December 1993), leaders of the nine most populous nations (Bangladesh, Brazil, China, Egypt, India, Indonesia, Mexico, Nigeria, and Pakistan), countries that together include more than one-half the world's population and almost three-quarters of its illiterate persons, launched a Joint Initiative on Distance Education, the so-called DE9 initiative. The Delhi Framework for Action states that "the initiative will be tailored to the specific needs and traditions of each country, to enhance existing efforts and to make use of new technologies" (UNESCO, 1994, p. 68).

These are only a few examples of the growing belief that technology will be able to break down barriers in crucial areas of educational development, such as those inhibiting equitable access to and quality of basic education for all. Other evidence of the same conviction and of the determination to use technology for the benefit of education can be found in statements of national policy. Developing countries, where educational problems continue to loom large, are often eager to explore emerging technological opportunities as a possible solution. How justified are these expectations? What can we learn from past experience? What is it that allows us to have renewed hope in the "new" technologies of today if in the past we have been less than successful? What should we do differently to make real progress in lowering the barriers to educational development? And what educational development should we actually promote?

Learning for the 21st Century

What are the challenges ahead in meeting the demand for learning in today's world? Will learning have a different meaning in the 21st century than it does today? How will the current educational landscape differ? In this section, we will identify six major challenges that face the world at the close of the 20th century and that affect the way we should look at learning.

Lifelong Learning as a Response to Continuous Change

First, there is the challenge of continuous change. Change will be an integral part of life in the 21st century. Individuals will need to learn to cope with change and complexity on a continuous basis. No longer will human beings be able to prepare themselves early in life for a fixed set of future tasks and roles. Education may no longer end when working life begins. The single career path is being replaced by a complex road system. The ability to learn, and to do so autonomously, is probably the most important ability human beings will need to acquire during the early years of life. That ability includes the capability to acquire access to and to interact effectively with changing learning environments that will no longer be restricted to the classroom. We are moving toward a world of learning without walls and without frontiers, in which learning encompasses all human activity. Societies are facing the challenge to create flexible, open learning environments with which potential learners can interact effectively. In an open learning culture, flexibility and interactivity will be as important as access and equity in the traditional conception of educational provision.

Learning by Social Entities Besides Individual Learning

The second challenge concerns the need to look at learning as a cooperative effort—something not just engaged in by individuals, but, to an increasing extent, by larger social entities as well. Cooperative learning is becoming an important requirement. The world is increasingly confronted with the need to balance change with stability. The boundaries of our traditional social systems are becoming more fluid. Changes in education have not kept up with the rapid pace of changing social boundaries.

Social units such as organizations, cities, whole countries, and partnerships across borders must define themselves as learning communities if they are to survive in the world of the 21st century (Marquardt & Reynolds, 1994). More than ever, learning is becoming a prerequisite for stability and peace. An organization like UNESCO, which has an important role to play in building the defenses of peace, has an undeniably important task here. Its Learning Without Frontiers program is a clear response to this and the other challenges identified in this section.

Open Architecture Learning Structures

The third challenge we are facing relates to the need to establish open architecture learning structures that reflect learning as a merger of work, learning, and leisure. This requires a shift away from the exclusive focus on institution-based education. The emphasis should be on lifelong learning rather than on initial education, i.e., on satisfying demand rather than on promoting supply. However, demand is largely seen as related to initial education, or, for those who missed the opportunity, second-chance education. This assumes that learning needs can be satisfied once in a lifetime, preferably at the beginning, and that a set of standard packages satisfies all. This may have been valid in the past, given the relatively slow pace of change individuals and society found it necessary to cope with in the span of one generation. This concept is no longer valid now that change is the status quo in both the developing and the industrialized world (neither of these adjectives being accurate descriptors). The traditional learning-for-work and work-before-leisure relationships are being replaced by a merger of work, learning, and leisure, requiring a learning environment that can respond in a flexible manner to a varying demand for learning.

Diversifying Educational Provisions and Learning Channels

A fourth challenge is to overcome the inadequacies of conventional education. Existing educational systems are increasingly unable to respond to the rising demand for learning, especially since they must also cope with declining financial resources. This calls for diversifying educational provisions, using multiple delivery channels to open up learning opportunities to all (particularly at the basic level), and concentrating on cost-effectiveness. Opening a multiplicity of channels connecting potential learners to learning opportunities is an important strategy to accommodate the learning needs of unreached or underserved target groups, such as girls and women, out-of-school youths, adult learners, and remote rural populations. Having those channels available, in addition to traditional ones, can make learning environments more accessible to the millions who are now unreached, cater to a diversity of interests, learning styles, and habits, and satisfy learning needs for individuals and communities in a variety of circumstances.

It is important to note that we are no longer simply interested in knowing who we did not reach but how we can offer learning opportunities independent of place, age, and time that are culturally and otherwise acceptable to the learner. We know that there are 900 million illiterate persons in the world and more than 100 million children who are not benefitting from primary education with sustainable learning gains. Even many primary and secondary school graduates in developing countries, and increasing numbers of university graduates in industrialized countries, may not have the learning skills to adapt to changing circumstances.

Integrating Emerging Technologies

The fifth challenge is to integrate emerging technologies with existing ones and prepare citizens for life in a technological society. In exploring the potential of emerging technologies, care should be taken that the unreached and underserved benefit. This requires careful attention to connecting infrastructure necessary for emerging technologies to the technological environments available to the underprivileged. For instance, the global information infrastructure should not be limited to the electronic superhighway. Access at different levels of technological capacity is required. This calls for the development of additional infrastructure analogous to that of provincial highways, other paved and unpaved roads, dirt tracks, and foot paths. Besides broadening access to learning for those most in need, this system will allow future generations to interact in ways that are not dominated by one or a few powerful cultures. A complex road map can be designed by pooling the creative inputs from different areas of interest and using a bit of imagination.

Lowering the Barriers to Optimal Learning

Finally, there is a sixth challenge to lower geographical, cultural, linguistic, and other barriers that prevent optimal learning. In a recent conference background report of the Organisation for Economic Cooperation and Development, Ehrmann (1994) lists "the ability to communicate, especially with people from other cultures" among four skills "likely to be of increased importance in the next century" (p. 12). Collaborative learning across geo-political and cultural boundaries is important, bringing students from different countries in contact with each other and with sources of knowledge. Diminishing resources and growing numbers of learners make it difficult to include real travel as part of the learning experience. Virtual travel, such as through computer networking, becomes an important alternative.

Other barriers that limit optimal learning are the boundaries separating different areas of knowledge. Often, knowledge is bound by the traditions of curricular development, which emphasizes compartmentalizing and restricting knowledge to well-defined disciplinary areas. Learners are not encouraged to travel between and beyond disciplinary boundaries. In addition, our own stereotypes limit our vision. Making knowledge understandable to different user groups and making it useful in different contexts and with different purposes means breaking through barriers.

A Multichannel Response to the Learning Needs of the 21st Century

Although the learning environment of the future may be considerably different from today's, change will not be immediate or automatic. We must carefully plan strategies to make such changes happen.

New Technologies and Old Ones

Distance education had come of age well before the advent of emerging technologies, such as fiber optic networks, satellite communication, computer networking, and video conferencing. For centuries only a very limited number of channels of communication were available to the educator. These were mainly based on face-to-face communication and the use of printed material. Reinforcement of these communication channels was possible through the use of learning aids such as chalkboards, demonstration models, and wall charts. It was only during the current century that additional channels, such as radio and television, became available. Much can be learned from the evolution of the use of these media for educational purposes.

The emergence of so-called new media is an old phenomenon. The accompanying hope that they will revolutionize the world, and in particular solve the education crisis, is equally old. As long ago as the completion of the first trans-Atlantic cable, for instance, Samuel Morse wrote that the telegraph would ensure that world communities would enjoy a peaceful coexistence in the future by "annihilating space and time" and thus "bringing mankind into a common brotherhood." When in the 1950s and 1960s radio and television became important educational media, hopes were again high that a solution could be found for problems such as those referred to by Philip Coombs (1967): "shortages of teachers, facilities and money; outmoded curricula and instructional materials; inadequate and over-taxed administrative structures; scattered hard-to-reach populations; traditions and inertias resistant to change" (p. 5). Similar voices may be heard today as the capacity to communicate increases exponentially.

Lessons Learned

Those "new media" contributed far less than expected. Simply having them available was not enough to ensure learning. The willingness, ability, and determination to use media properly and the political motivation to channel societal resources were also necessary to translate potential into achievement.

In fact, decades of media comparison studies have failed to reveal the ideal medium for instruction. In summarizing the results of such studies, Clark (1983) refers to media as "mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition" (p. 445). However, Clark's conclusion only applies to a part of the world that has many vehicles for delivering groceries and learning. The analogy changes if one compares the "haves" and the "have-nots."

There is little doubt that nutrition patterns are different for those served by grocery trucks and those who have none. Similarly, educational achievements in a world with many media options may be different from those in a world without any options at all.

Where media do play a role in education, two important conclusions can be drawn. One conclusion is that it does not really matter which media are being used. How the particular medium is being used is more important than which medium is used. The second conclusion is that using a combination of media in a well thought out manner does contribute to improved educational achievement. The quest for optimal education should not simply seek to replace existing obsolete media with newer and better media. Real improvement in education comes from a balanced consideration of the various potential uses of all possible means. We should develop and modernize education by applying sound principles of instructional design to develop learning systems that work within a given context.

Balancing the Use of Available Media

Revisiting Clark's analogy, one does not need the most sophisticated grocery trucks to attain adequate, or even excellent, nutrition. Where simple media such as chalkboards, perfectly interactive tools, are used incorrectly, introducing sophisticated, costly technology such as computer-based interactive multimedia presentations or educational television programs delivered by satellite will reap no benefit. A balanced attention to developing the use of all available media is what really matters. And let us not forget that the human being, the teacher, is one of the most sophisticated mediators available to promote learning.

Teachers may be channels of communication, as well as role models. In addition, teachers serve as managers of the various channels. They may likewise play a role in contributing to the content handled through the various channels. Learning requires a human and humanizing environment. Whatever the role media may play in facilitating learning, this human dimension will remain a crucial one. Its potential should be fully explored in the design of any learning system. In a world in which technology plays an increasingly important role, teachers must be capable of handling different technologies and be able to assist learners in deriving the maximum benefit from their interaction with both the human and technological dimensions of the learning environment.

References

Bates, A. W. (1990). The future. In A. W. Bates (Ed.), *Media and technology in European distance education: Proceedings of the EADTU workshop on media, methods and technology*. Milton Keynes, UK: Open University.

Bruner, J. S. (1974). *Beyond the information given*. London, UK: George Allen & Unwin.

Cennamo, K. S. (1993). Learning from video: Factors influencing learners' preconceptions and invested mental effort. *Educational Technology Research and Development*, 41(3), 33-45.

Chang, T. M., Crombag, H. F., Van der Drift, K. D. J. M., and Moonen, J. M. (1983). *Distance learning: On the design of an open university*. Boston, MA: Kluwer/Nijhoff.

Clark, R. E. (1983). Reconsidering research on learning from media. *Review of Educational Research*, 53(4), 445-459.

Dervin, B. (1981). Mass communicating: Changing conceptions of the audience. In R. E. Rice & W. J. Paisley (Eds.), *Public communication campaigns*. Beverly Hills, CA: Sage.

Ehrmann, S. C. (1994). Responding to the triple challenge facing post-secondary education: Accessibility, quality, costs. In *Organisation for Economic Co-operation and Development (OECD). The future of post-secondary education and the role of information and communication technology: A clarifying report* [Document CERI/LBS(94)5]. International Conference on Learning Beyond Schooling: New Forms of Supply and Demand, OECD, 14-16 December 1994. Paris, France: OECD, Centre for Educational Research and Innovation.

Ferrington, G. (1994). *Kids radio is on the air. TechTrends, 39* (1), 38-40.

Forsythe, K. (1986). *Understanding the effectiveness of media in the learning process*. Paper presented at the World Congress on education and Technology, Vancouver, BC, May 1986. Victoria: Learning Systems Knowledge Network (as cited in Holmberg, 1990).

Grant, A. E. (1993). Researching the environment of new communication technology. In A. E. Grant and K. T. Wilkinson (Eds.), *Communication technology update: 1993-1994*. Austin, TX: Technology Futures, pp. 339-349.

Hancock, A. (1993). *Contenporary information and communication technologies and education.* Working document prepared for the International Commission on Education for the Twenty-first Century. Paris, France: UNESCO.

Heinich, R., Molenda, M., & Russell, J. D. (1985). *Instructional media and the new technologies of instruction* (2nd ed.) New York, NY: John Wiley & Sons.

Holmberg, B. (1985). *Status and trends of distance education* (2nd ed.). Lund, Sweden: Lector.

Holmberg, B., Schuemer, R., & Obermeier, A. (1982). *Zur Effizienz des gelenkten didaktischen Gespräches* [On the efficiency of the guided didactic conversation]. Hagen, Germany: Fern Universität, ZIFF.

Holmberg, B. (1990). The role of media in distance education as a key academic issue. In W. A. Bates (Ed.), *Media and technology in European distance education.* Milton Keynes, UK: Open University.

Kozma, R. B. (1994). Will media influence learning? Reframing the debate. *Educational Technology Research and Development*, 42(2), 7-19.

Marquardt, M., & Reynolds, A. (1994). *The global learning organization: Gaining competitive advantage through continuous learning.* Burr Ridge, IL: Irwin.

Rogers, E. M. (1983). *Diffusion of innovation* (3rd ed.). New York: Free Press.

Rogers, E. M. (1986). *Communication technology: The new media in society.* New York: Free Press.

Roszak, T. (1986). *The cult of information: The folklore of computers and the true art of thinking.* New York: Pantheon.

Salomon, G. (1984). Television is 'easy' and print is 'tough': The differential investment of mental effort in learning as a function of perceptions and attributions. *Journal of Educational Psychology*, 76 (4), 647-658.

Secretariat of the International Consultative Forum on Education for All. (1990). *World declaration on education for all.* Paris: UNESCO.

Shannon, C. E., and Weaver, W. (1949). *The mathematical theory of communication.* Urbana, IL: University of Illinois Press.

Steffen, J. O. (1994). Edenic expectations of new technology: A recurring pattern in American culture. *Phi Kappa Phi Journal National Forum*, 74(2), 11-15.

UNESCO. (1967). *New educational media in action: Case studies for planners* (three volumes). Paris: UNESCO International Institute for Educational Planning (IIEP).

UNESCO (1994a). *Education for all summit of nine high-population countries: Final report*. Paris: Author.

UNESCO. (1994b). *Lifelong learning for the 21st century*. Keynote address by Federico Mayor, Director-General of the United Nations Educational, Scientific and Cultural Organization, delivered at the First Global Conference on Lifelong Learning in Rome, Italy, 30 November 1994. Paris: Author.

Zuckermann, W. (1991). *End of the road: From world car crisis to sustainable transportation*. Post Mills, VT: Chelsea Green.

Pressure Points in Achieving Education for All

4

Multichannel Learning for Nonformal Education in Developing Countries

Tony Dodds

Nonformal education was invented in the late 1960s and early 1970s by writers such as Coombs and Ahmed, and Sheffield and Diejomaoh who recognized that the traditional language and thought patterns of formal (i.e., school- and college-oriented) educationalists was inadequate to describe a category of education and learning, particularly among adults, which seemed crucial to developing societies. Nonformal education was learning about life—health, agriculture, community development, political and civic affairs, home economics, and trade union and cooperative organizations. It was not done in schools and colleges; on the whole it was not organized by ministries of education; it followed no carefully constructed curricula and it led to no examinations. But in much of the developing world in that immediate postcolonial era, it was the most important, and for millions the first, opportunity to undertake organized and purposeful courses of study or learning. Through such courses new information, ideas, and knowledge relevant to life in a rapidly developing society were made available to people who had never had the opportunity to go to school. That situation has not changed.

The invention of the phrase *nonformal education* coincided with the explosion in availability of communications media, especially radio (throughout the world) and television (in industrial countries). Many educational innovators were euphoric in their belief that these media would bring about instant equity in classrooms by taking the best teachers over the air to the worst schools, and in their conviction that adult education—organized education about life—could take place, also over the air, without literacy.

One problem with nonformal education is that, as with all negative conceptions, it can only be defined in terms of what it is not. Nonformal education is education outside of schools and colleges

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and independent of sequential and structured curricula. It is not dominated by teachers and school managers, and it does not lead to examinations. Some adult educators, progressive critics of formal schooling, have tried to invest the "negatives" with a positive side, describing nonformal education as student-centered, needs-based, flexible, and responsive. But most of these "positives" have found their way (or did in the 1970s: perhaps we're moving in reverse in the 1990s) into the formal education system. The negatives are no longer exclusive.

Another difficulty with the phrase is that the students of the courses it was invented to describe are products of societies which have incorporated formal education as an essential development goal and criterion. The fact that these students have not had nonformal education does not mean they do not value it. If the courses they are undergoing are proper education they should conform to proper—formal—education. They should be linked to literacy and numeracy; they should be "properly taught" by "proper teachers"; they should lead to more advanced courses for those who wish to advance; and they should lead to certificates. In some ways these students have been more realistic than the liberal adult educators who invented or incorporated the phrase into their educational philosophy. They know that literate and formally educated people get jobs and that certificates are a prerequisite for paid employment. Hence the overlap of and confusion between nonformal education (and many ministries of education in developing countries now have departments of nonformal education) and adult basic education, including literacy and numeracy and primary school equivalency programs. On a personal note, I was in the 1960s and remain today a true believer in the concept of nonformal education.

But let us not get bogged down in academic definitions. For the purposes of this chapter—and, I suspect, for many of the officials and implementers of programs in such departments of adult and nonformal education—a commonsense definition or at least an understanding of the phrase is necessary. Under the heading of nonformal education we include all such learning programs about life for adults (and even for young adults) which take place outside the school, college, or university system. These programs may take place in school buildings on a part-time basis. They may or may not be taught by teachers. They may or may not have curricula, examinations, and certificates. They may or may not include literacy and numeracy, as well as basic knowledge and understanding of science, society, and the environment. They may or may not cover subjects and skills taught in primary (or postprimary) schools. But they are organized; they do not happen by chance; students join with a specific goal and know that to succeed they must pursue that goal for a significant period of time. And, at the end of that time, if they are successful, they will have achieved a state of knowledge, skill, and understanding they did not have before. How, by what methods, and where this learning took place is largely irrelevant.

Can the Expectations of Nonformal Education Be Achieved Using Traditional Formats?

The hope and expectation of those who invented the phrase nonformal education—and true believers in it, such as myself—was that recognition of the importance of this kind of learning would lead to the allocation of development resources. If this kind of education can, should, and does play a vital role in helping people to gain the skills to realize their full potential for development, then it must attract the resources required to make it effective. It must find ways of expanding its coverage so that those who benefit represent significant and critical proportions of the undereducated masses of underdeveloped societies to make an overall and noticeable difference to development.

But nonformal education, both before the phrase was invented and in the 30 years since, has already developed a pattern of provision. By its very nature nonformal education is idiosyncratic. It grows in a piecemeal fashion. It is run unsystematically, usually by small local organizations operating on limited and local resources, often under the direction of a small group of highly motivated individuals.

Must nonformal mean small, local, and unreplicable? Has it any global significance? How can the efforts and achievements of such local organizations be replicated on a scale large enough to have an impact on national development?

It is at this point that the influence of the mass media come in. From an early stage in the provision of nonformal education, and long before the phrase was invented, mass communication media were incorporated into the traditional local extension officer modes of presenting information, skills, and ideas about agriculture, health, and community development in order to extend their coverage. This is the origin of what we now call distance education, development support communication, or, even more recently, multichannel learning approaches to nonformal education. The challenge is to use such approaches to reconcile the local and personal nature of nonformal education with the need to reach huge numbers of potential learners who cannot be reached by local, personal communication and teaching networks.

The History: What Can We Learn from Experience?

From a very early stage in the history of learning—possibly before learning was formalized into the schools and structures by which we recognize education today—nonformal approaches to teaching and learning were common which used media that allowed learning to take place without permanent or regular face-to-face contact. Most ancient, classical, and medieval learning structures include some examples of teaching through the written word of pupils or disciples who were far from their teachers or gurus. This possibility increased dramatically when printing and distribution systems were invented and refined, and again when mass broadcasting systems were invented.

Let us look in more detail at some of the most significant historical trends in this development.

Printed Study and Discussion Guides for Use in Study Groups and Study Circles

There has been a long tradition both in the United States and in Sweden of using printed study guides as the basis of discussion and learning in organized tutorless study groups or study circles. In the United States, the Chautauqua movement and the Great Books program were based on the belief that all people could and should benefit from the organized study of great works of literature. To make this possible for adults not enrolled in formal education courses in schools or colleges, tutors prepared study guides to be used in groups to help students to follow, understand, enjoy, and learn from great authors of the past and present.

In Sweden in the late 19th and in the 20th centuries, particularly in periods of rapid industrialization and the social and political change, parapolitical organizations such as the trade unions and the cooperative movement assumed strong adult education responsibilities. To educate members and associates, these organizations developed study guides on social and political education issues for discussion in organized study circles.

Two further examples come from Africa. In the late 1960s an adult educational institution was set up by the Roman Catholic Church for francophone West Africa, in the Cote d'Ivoire, the Institut Africain pour le Developpement Economique et Social (INADES). INADES provides basic educational courses in agriculture and social development to small farming communities throughout the French-speaking region. It developed a series of booklets on topics of direct economic or social concern (soil preparation, rural saving, child care, rural credit) written in very simple French; each booklet teaches the basic practical knowledge needed for a particular activity. These booklets are usually studied in groups with the help and guidance of a local extension officer or *animateur*. Sometimes the *animateurs* and *animatrices* enroll and study the booklets individually and then use the booklets and the knowledge, skills, and ideas they learn from them to guide and teach local groups of individuals. Each self-study booklet, which is highly illustrated and sometimes accompanied by wall charts and diagrams, contains a feedback questionnaire which students/groups complete and send to the local INADES tutorial office. These show their level of understanding, raise questions and problems to which they cannot find satisfactory answers, and report on their own local experience. The questionnaires are the basis on which INADES tutors supply supplementary advice and guidance. As well as working in many countries in francophone West Africa, INADES has also established offices in Ethiopia and Kenya.

In 1974, the Lesotho Distance Teaching Centre (LDTC) was established to develop distance learning programs of both parallel formal secondary education and nonformal education. At an early stage the LDTC recognized two features of Lesotho. First, there was a surprisingly high level of adult female literacy. Most young and middle-aged men spent large periods away from home working in the South African mines, so women maintained the families, farms, the local economy, and the community. Second, Lesotho's geography caused immense difficulty in maintaining regular face-to-face learning opportunities for most of the rural population. LDTC therefore developed a series of self-study booklets on topics of interest, such as crocheting, garment making, livestock husbandry, and first aid. The booklets were originally designed and intended for individual study. While being widely so used, many people also study the booklets in local village groups. They have been used as the basis for the provision of feedback and follow-up extension and advisory services. One such service has been the provision of access, through sustained and successful study, to a small revolving loan and credit fund from which village groups have been able to borrow small sums of money to set up group-based income-generating schemes, putting into practice the skills learned from the booklets.

Development Support Communication: Information and Education for Development Through Broadcasting

Since the early days of their use as mass media, both radio and, to a much lesser extent, television have been used by technical and community extension services (agriculture, health, community development, electoral commissions, political education departments) to reach larger sections of the population. Broadcasts on special topics of importance are aired on a regular basis by special arrangement between the broadcasting station and the ministry or agency responsible for that topic, to give information for development, to educate attitudes toward development, or sometimes to exhort people to develop themselves! A variety of approaches have been used for such informational programs: straight presentation through talks or interviews; magazine-style approaches to creating interest and reaction; short, sharp advertisements on social, political, or economic change; and drama-based so-called soap operas. In many of these formats there is nothing other than the broadcast itself—no accompanying print materials, no linkage with other media, no organized connection with face-to-face extension services. Such approaches set out mainly to give information about, to arouse interest in, and to educate attitudes toward development issues and activities. There is considerable evidence that, within these limits and so long as they are not going against accepted and acceptable opinion, such development support communication can achieve success in exactly that—supporting already acceptable development. But there is usually little organized follow-up or integration of the messages into inclusive or comprehensive learning activities. Such broadcasts can have a very significant educative impact, but they do not in themselves constitute organized or structured education.

Radio and Television Forums, Clubs, and Study Groups

Parallel to the growth of development support communication—though starting earlier in broadcasting history—was the use of radio and then television for more organized learning experiences for groups of like-minded people, using broadcasts, instead of a teacher or tutor, to structure their study of topics and concerns of burning interest or importance to their lives.

The BBC, at a very early stage in its development of educational radio, worked with adult education and worker education movements (the trade unions, the Workers Education Association) to arrange adult education radio series linked to organized listening and study groups. Such nonformal education broadcasting lost the battle of priorities during the 1930s to formal school broadcasting.

The idea was picked up by the Canadian Broadcasting Corporation in the late 1930s and adapted for use in depressed farming communities. Regular weekly radio programs, accompanied by supporting printed booklets with feedback reports/questionnaires, were made available to groups of farmers informally organized by agricultural extension services. Farmers and their families listened, read, discussed, and made decisions about issues and activities important to the improvement of their living and economic conditions. Through the report forms they were able to show what they had learned and to seek further information and assistance.

The model survived in Canada into the 1950s. By then it had been adapted for developing countries, first in India in 1947 and later in Ghana and many other African and Asian countries in the 1960s and 1970s. By 1990, on the basis of a collection of case studies of nonformal education at a distance in the Commonwealth, Paul Fordham concluded "The radio Rural Forum idea has been running for a long time...the idea does seem to have run out of steam!" For nearly 20 years in developing countries, however, and for 20 years before that in Canada, it had shown itself to be a very powerful and effective means of reaching rural adults with education directly relevant to an improvement in their economic status and in their everyday social lives.

One adaptation of the radio forum took place in francophone countries in Africa, drawing also on experience in France of the nonformal use of television for adult education through teleclubs. This was the experiment in several countries with radio clubs. For the most part these were very similar to the radio forums of their anglophone neighbors. A greater emphasis, however, was put on audio feedback: clubs, or local reporters attached to an area in which there were several such clubs, were equipped with audio recorders on which they collected the reactions and questions of club members. The recorders were then sent back to headquarters as the basis for future radio programs in the series.

With the exception of India and perhaps Canada, most of the forum and club experiments remained quite small in scale and limited in their coverage, in spite of the use of the mass medium of radio. This was because of the restricted resources provided, outside of the radio station, to the support of the listening groups. The radio study group (or learning group) campaign approach was an adaptation on a much larger scale, in the late 1960s, '70s, and '80s. In this approach, the same basic pattern of a series of radio programs, organized listening and study groups, supporting print materials, and links with local extension services was used. There were two major differences, however. First, the program series were planned for a limited time span, say three months, rather than as a series which, once started, would go on ad infinitum. Second, though there might be one lead agency organizing the project, for a limited period that agency, with strong central or local government support, brought together in a coordinated fashion the services of a large number of other agencies. Thus the personnel and technical and financial resources available were much larger and enabled a much wider and more comprehensive outreach than was usually achieved by the forums and clubs. The most significant example of this approach occurred in Tanzania in the early 1970s, where campaigns on health issues and on political education issues reached millions of adults in organized study groups and, from the evidence available, appear to have had a long-term impact. Similarly large-scale national programs took place in Botswana in the 1970s, on agricultural and land use policy, and in Zambia in the mid-1980s, on cooperative education. Regional programs took place in Tanzania on reforestation, in Botswana on the National Development Plan (1973) and, on a larger scale, the Tribal Grazing Lands policy (1976), and in Ghana, in the late 1980s and early 1990s, on water and health issues.

Radiophonic Schools in Latin America: The Media and Adult Basic Education

Another adaptation of the Canadian Farm Forum movement was developed in Latin America. A Colombian Roman Catholic Priest, Fr. Salcedo, became convinced after visiting Canada in 1947 that the radio plus study group model could be used to provide basic adult education to the rural people of Colombia living in remote and mountainous homesteads. What developed, as Acción Cultural Popular Colombia (ACPO), put emphasis on literacy and numeracy and a program of adult education consciously made equivalent to the educational stages of formal primary schools. It built a curriculum aimed at teaching progressive educational skills in the same kind of adult, everyday life, concerns covered in my previous nonformal education examples—health, employment, agriculture, and community organization—and including, as the organization was church-based, a subject on spiritual issues. Another major distinguishing feature of the Radiophonic Schools, as ACPO and its derivatives in other countries in Latin America came to call the study groups following their radio programs, was the ownership by the organization itself of the radio station. In fact special stations were established for the purpose. This gave the Radiophonic Schools much greater control over content and program patterns, as well as the air time available, than is usually possible in publicly owned stations. The programs are therefore much more directly didactic and specifically aimed at the restricted and identified audience actually enrolled in the schools. The model flourished and spread to many countries in the region in the 1970s, survived through the 1980s, and still exists in some countries in the 1990s. In Colombia itself, as in some other countries, it has now ceased to operate, having initially won government backing and later having been absorbed into government adult education programs.

In India the Radio Rural Forums program led almost directly to another attempt to use the model for more structured curricula-based adult education in the All-India Radio's Farm School of the Air program as part of its Farm and Home Programs. This still survives on a limited scale; it is now more prominently provided by television than by radio.

In a somewhat more limited way, several countries in Africa and Asia have used the mass media to support adult literacy and numeracy programs. A recent example comes from Ghana. There, radio and rural newspapers have been used as crucial support media in a nationwide adult literacy campaign launched in 1989 and continuing to date. The roles identified for radio have been the provision of information about the campaign, motivation and mobilization campaigns, the provision of programs about development themes which are functionally incorporated into the literacy primers, and the provision of training and support for literacy tutors and local organizers.

Distance Education for Nonformal Education and Development: The International Extension College (IEC) Experience

So far in this chapter I have not used the phrase distance education, except in the context of the LDTC. This is probably the most extended piece I have written in 20 years without doing so. All the examples I have quoted so far, except that of LDTC, have not primarily or originally seen themselves as distance education. They have been examples of nonformal education which have used various media and combinations of media for adult educational purposes. My last set of examples come from the projects associated with the IEC which have, through that association, seen themselves as distance education (once that phrase was invented). We in the IEC set out quite consciously—and perhaps naively and idealistically—to explore ways of using distance education approaches for nonformal education.

Our first three major projects, helping to set up distance education colleges in Mauritius, Botswana, and Lesotho, all included nonformal education activities in their original plans and programs during the early 1970s. This emphasis has remained both with the Mauritius College of the Air (MCA) and the Lesotho Distance Teaching Centre (LDTC) until today, though in the case of the MCA this became mainly a matter of providing media support to information, extension, and education projects rather than distance learning. The Botswana Extension College (BEC) carried out a variety of nonformal education experiments until it was absorbed, in 1978, into the new government Department of Nonformal Education. Since that time its distance education efforts have been concentrated on out-of-school secondary education. Similar plans were included in the proposals for the University of Lagos Correspondence and Open Studies Unit whose establishment IEC supported from 1974 to 1976. Those plans, which were for nonformal training programs for small-scale industry and business entrepreneurs, never materialized.

At the end of the first phase of IEC's development several staff members wrote a book based on our experiences and contacts to date. In it we argued the case for the establishment of radio colleges, modeled closely on the Radiophonic Schools of Latin America, in which a wide range of courses on the subjects common in nonformal education would be offered and loosely or flexibly constructed into an adult curriculum. This would allow adults to study subjects to meet their immediate needs and, if they chose, to combine those subjects into a comprehensive adult basic education which could be made equivalent to the skills and knowledge-base covered in formal primary schools.

Since publishing this book in 1980 the IEC has been heavily involved in at least 15 other distance education development projects. Four of these projects (the Basic Functional Education Programme of the Allama Iqbal Open University in Pakistan, the Zambia Cooperative College's Extension and Outreach Programme, the Ghana Functional Literacy Project, and the Adult Basic Education Project for Fort Hare in South Africa) have been exclusively concerned with nonformal education, and six of the projects have been involved with mixed programs of distance education, including nonformal projects (the Sudan Open Learning Unit, the Namibian Extension Unit, the South African Extension Unit, the Refugee Adult Education project of the Institute of Inservice Teacher Training in Somalia, the South African Institute of Distance Education, and the Tigray Institute of Distance Education).

The programs have experimented with a variety of media combinations. Most have included some audio or radio component, some printed self-study materials, and some learning in face-to-face study groups. They have addressed a wide variety of subject matters: agriculture and livestock husbandry, rural credit, cooperative organization, health, hygiene and nutrition, small-scale business skills, and community affairs. They have catered for a wide variety of audiences: adult illiterate refugees, village women with restricted access to the world outside their villages, cooperative society members, and young adults who have been unable to get places in secondary schools and are being encouraged to develop their careers and livelihood in the rural economy.

There have been many experiences of exciting success and achievement, but very few large-scale programs have developed from them. They have shown evidence of the potential to provide, through these approaches, greatly increased access to nonformal education for underprivileged populations. But rarely have these programs attracted the resources and the political support necessary to turn them into regular components of national education and development systems. The dreams have remained largely unfulfilled.

The Future: Where are We Going?

So why has nonformal education turned regularly over the last several decades to new approaches and new media in order to reach its intended audience? First, there has been a growing recognition that adult learners need greater flexibility in terms of the time, place, and pace of study than school or college students need or than more traditional delivery methods can provide. Second, adult students, for the most part, have a clearer idea of what they want to learn, and why, than do their younger counterparts. It is therefore important that they can exercise a greater degree of control and choice over what they study and how they learn: if for no other reason than to help them maintain their motivation. Finally, it is recognized that many potential adult students are constrained by their previous educational experience or their lack of it (and by their lack of formal qualifications) from enrolling in new courses. Nonformal education must find ways to overcome these constraints without sacrificing the quality and relevance of the learning offered. It has therefore been seen as necessary to turn to more open and flexible systems of provision. Given the huge numbers of adults in developing countries in need of such nonformal education, moreover, and the widespread and often isolated places in which they live, it has become increasingly obvious that the traditional, formal system of education is inadequate. Nonformal education has out of necessity turned to the outreach potential of the mass media of communication while seeking to link it to informal and flexible student support based on existing social networks.

Why, then, have the attempts described in the previous sections, while proving the potential for success in limited small-scale pilot projects, failed to achieve large-scale national impact? It is possible to identify four major problems. First, it is often those sections of society which most need expanded nonformal education facilities that have least access to the media of mass communication: electricity, telephone networks, television coverage, rapid postal delivery services, and even the ability to buy batteries for their radios. Such potential students, moreover, are most in need of guidance on the local application of universal knowledge and general scientific information, and the mass media are, on the whole, not very good at such local and individualized adaptation. Second, the social, economic, and educational background of this target audience makes it harder for them to learn from educational delivery systems which rely heavily on self-study, which most education at a distance does. Third, a high proportion of the learning needs of such an audience relate to practical skills. Finally, learning such skills requires demonstration, practice, and guidance; these are notoriously hard to provide in media-based education. The first three problems can be solved by imaginative and innovative combinations of media, face-to-face student support systems, and the exploitation of resources which exist for other purposes. The fourth problem is less easy to solve through educational innovation. It is evident from the history of nonformal education and innovations with media combinations within it that as yet most governments do not take nonformal education seriously. The failure to expand and to achieve significant national impact on the whole results from a lack of the minimum resources and the political commitment required to make such expansion possible.

In the last 20 or 30 years, nonformal education has not lacked for educational innovation, imagination, and experimentation. But, in addition to these elements, we need three much more mundane and less exciting commodities. The first of these is the ability to exploit and recycle existing resources—personnel, facilities, and social networks, whether or not they exist primarily for educational purposes. The second is effective collaboration and coordination of many different agencies and institutions, governmental and nongovernmental, local, national, and international. The third is the financial and political commitment to fund these projects.

This brings me, finally, to the concept of multichannel learning and my justification for contributing this chapter to a book promoting and publicizing that concept. I believe, perhaps simplistically, that there are two essential components to any solution to the problems constraining the expansion of nonformal education and its ability to have a significant impact in developing countries.

The first is a much more integrated, flexible, and multifaceted approach to the provision of nonformal education. It is not a division into traditional, face-to-face patterns on the one hand and education at a distance on the other but rather a continuum between purely face-to-face teaching and learning, and purely media-based information services, with the primary emphasis on the segments in between those extremes. Distance education, which has been my profession for the last 20 years, is an inadequate description of this approach to nonformal education. That is the attraction of the concept of multichannel learning. Unfortunately, multichannel learning is an ugly phrase, which is off-putting to many educationalists, who believe that education is primarily about the communication that takes place between tutors and students and between students and students at points of contact, not about the channels through which that communication and contact is brought about. The emphasis must be on openness—open access, open entry, open learning.

But changing the name of what we are doing is not enough. That would be too easy. The second essential component for change and for success in opening up nonformal education, whether through distance education or multichannel learning, is to create the political will and commitment to make nonformal education an equal, rather than a poor relation, in the educational family. Without that political will, no matter how many channels we create to reach the heart of educational underdevelopment, they will all remain peripheral.

5

The Challenge of Open Secondary Education: Demand and Models

Paud Murphy

This chapter looks at secondary education and makes the argument for individual and country investment at that level. However, the most compelling argument for an increased investment in secondary education will not come from economists, planners, or financial analysts but rather from the parents of children who have completed primary education, who want their children to have the opportunity to continue. As primary education for all becomes a reality, there will be an increasing number of children seeking secondary education. Thus, the question for most countries is no longer should we provide secondary education for all our children, but how, and who pays. In this context, discussion of open secondary education is vital.

Meaning

Secondary education means different things in different countries and sometimes even within the same country. One reason for this is that secondary education follows primary education and precedes tertiary/higher education, and both primary education and higher education vary in content and in length of school or college cycle. Another reason for the different understandings of what secondary education means is that the concept encompasses a number of purposes: broad preparation for the world of work, development of specific vocational skills, consolidation of the skills developed in primary school, and preparation for the next level of education. In many countries there are different secondary education systems, most often one academic stream and one vocational/technical stream. A number of countries include primary teacher education colleges offering second-level secondary education courses.

For this discussion, I intend to examine the provision of a general secondary education. This is defined as broadly academic and consolidates and extends the skills acquired through primary education. General secondary education prepares students for a

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number of possible career options, including the possibility of continuing higher education.

Benefits

A general secondary education contributes to the development of the country and the individual. In a recent review of the evidence on rates of return, however, Psacharopoulos (1994) finds that the private returns to general secondary education[1] for individuals in developing countries are as high as 26.6% in sub-Saharan Africa and above 15% across all regions. There is little debate over the high social returns at the national level, either. Psacharopoulos found social rates of return ranging from 11.2% in Europe, the Middle East, and North Africa to 18.2% in sub-Saharan Africa[2]. Given the evidence, it seems sensible for most governments to continue to increase their investment in secondary education.

In addition to its contribution to the individual earning power and to the economy, secondary education has a number of other unique functions to perform. These include helping young people to make the social transition from child to adult and bridging the gap between the world of the family and the world of work. Although these functions are often underestimated in discussions of benefits, they are not underestimated by parents or employers who assign minimum entry qualifications to certain occupations. Thus, secondary education serves as a selection mechanism for the transition to work or to higher education.

Places in secondary schools are scarce. Yet in most countries, parents are prepared to make considerable sacrifices to ensure their child's entry and their future security. The skills and resources needed to make that transition result in a skewed representation in school. Thus middle- and upper-class families can use their resources, contacts, and an assortment of courses and tutors to advance their children's education while lower-class parents can not. As a consequence, participation at levels of scarcity is biased in favor of the "haves" rather than the "have nots," further reinforcing social class divisions.

Whatever arguments are made for investing in secondary education by economists, educationalists, or human rights proponents, the decisions on public investment and involvement will be made by governments, and governments, even nondemocratic ones, respond to political pressure from community members. In many countries overwhelming pressure from the parents of primary school leavers has forced governments to expand opportunities for a secondary education. Thus the question for most countries is not should we provide opportunities for a secondary education, but how, and who pays.

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[1] General secondary education does not cover vocational education or training.

[2] There is a good deal of debate on the relative social returns to different levels of education. Does primary education have a higher social return than secondary, tertiary than primary, etc?

Demand and the Numbers

Because of the different lengths of the school cycles in different countries, the admission of young people under and over preferred ages to school, and the lack of data on out-of-school education initiatives, it is very difficult to give a precise estimate of the number of of school-aged young people who are getting a general secondary education. An estimate provided by UNESCO indicates that there were places in secondary schools in developing countries for 42.3% of students in the 12-17 age range in 1990. This implies that at least 286 million young people in this age range were out of school in 1990. The actual numbers are likely to be much higher than this as many of the places are occupied by overage and underage students. For most of the countries for which UNESCO has data, there is a significant difference between the gross and net enrollment ratios (GER and NER, respectively). For example, in Lesotho, the GER is 26% and the NER only 14%, and in Indonesia GER is 45% and NER is 38% (UNESCO, 1993).

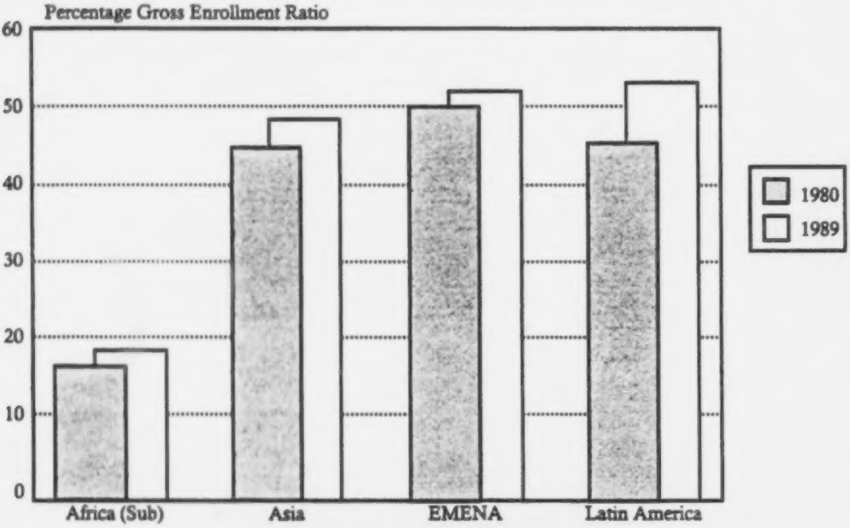

Figure 1. Secondary education gross enrollment (including vocational streams), 1980-1989

Source: UNESCO data and PHREE

The number also does not tell us about regional imbalances. The table below shows the gross enrollment ratios currently (1990) in sub-Saharan Africa, Asia, the Middle East, and North Africa and Latin America. As can be seen, relative to population the access to a secondary school is lowest in sub-Saharan Africa. In 1986, out of 43 countries in sub-Saharan Africa for which data were available, 27 had GER less than 20% and 13 had GER at the secondary level of less than 10% (AFTHR, 1990).

The numbers do not tell us how many of these young people are ready for a secondary education, having completed primary school, and what the demand from these young people or their parents is likely to be. One very important indicator of likely demand is the transition rate between primary and secondary school in developing countries (see Table 1).

Fewer than 40% of the children completing primary school in Africa find a place in a secondary school, and only 60% of the children completing primary school in the Middle East and North Africa find a place. In Burundi, Malawi, Rwanda, and Tanzania, fewer than 10% of those successfully completing primary school were admitted to secondary schools in 1990 (UNESCO, 1994).

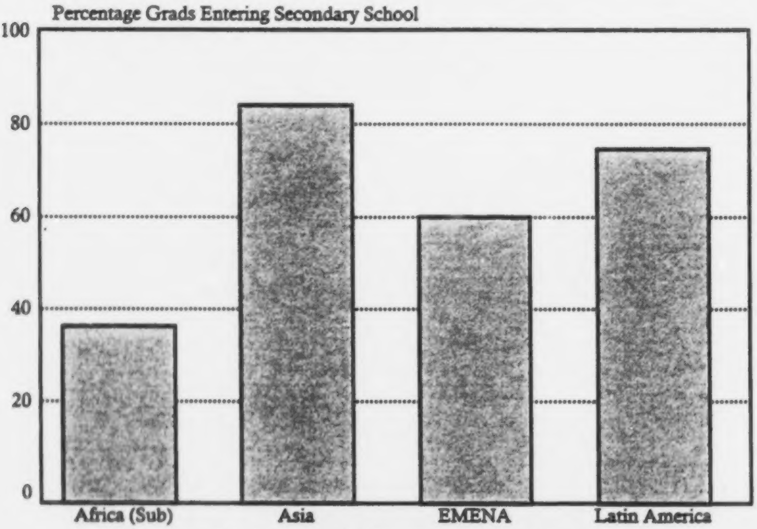

Figure 2. Opportunity for entering secondary education
Transition Rates by Region

Source: UNESCO (1991) World Education Report

Finally, the numbers do not tell us anything about accumulated demand. The low transition rate between primary and secondary education is not a new phenomenon and many adults who have completed primary school would benefit from secondary school. The number of adults who have studied out of school and achieved primary school equivalence levels could also be added to this figure.

Costs

The main reason countries do not provide secondary education for all their children, however, is cost. The resources needed to provide universal primary education are beyond the reach of many developing countries. While countries are desperately trying to find the resources needed for universal primary schooling, they simply cannot find the extra resources needed to provide secondary education for all of their children.

Secondary education also costs more. Each secondary school student costs on average about 3.5 times more than each primary pupil in the least developed countries (UNESCO, 1991). In some countries, the cost differential is significantly higher. In Uganda, for instance, the factor is 20, and in Mali the factor is 8 (UNESCO, 1994). These costs reflect the increased salaries of secondary school teachers, lower student-teacher ratios, the higher costs of facilities, and the increased cost of instructional materials. The costs of providing secondary schools increase further where disadvantaged groups must be reached. For example, providing boarding schools for girls helps them to overcome societal barriers to their education, but boarding schools are expensive. In many countries, dispersed populations require building schools which are "uneconomic" in terms of the number of students being served. Clearly, expansion of secondary education provision utilizing traditional secondary schools is beyond the reach of many countries and Universal Secondary Education utilizing traditional schools may prove beyond the reach of even relatively more wealthy middle-income countries.

Barriers to Secondary Education

It is safe to say that the demand for secondary education will continue to grow. The movement toward education for all confirmed by all the countries attending the Jomtien conference in 1990 is likely to increase further the pressure on the demand for secondary school places, as primary schooling will become more efficient, and a larger percentage of those starting school are likely to finish.

There are a number of barriers to meeting this growing demand for secondary education. First, the Education for All focus is likely to divert any additional government resources into primary schooling. Second, as has been explained, government expenditure per student in general secondary school is on average significantly higher than expenditure per student in primary schools. Third, the cost of building and equipping a secondary school is significantly more than the cost of building and equipping a primary school. Fourth, private secondary schools may alleviate the demand for secondary schooling among the more wealthy, but they will not provide opportunities for poorer families.

Given the continuing pressure to provide more and better quality primary schooling, the increasing social demand for secondary education, the continuing cost differential between expenditure per pupil in primary school and expenditure per pupil in traditional secondary school, and the limited impact of private provision on the demand, governments must attempt to find low-cost alternatives to traditional schools as the main providers of secondary education.

Multichannel Learning Model and Strategies

Models which use innovative strategies to deliver and improve secondary education in a cost-effective manner exist in various countries. In developed countries, these include a range of private sector initiatives, including correspondence colleges aimed mainly at adults and outreach programs aimed at helping young people unable to get a place in traditional schools.

In developing countries, initiatives which aim at reaching young people include the Air Correspondence High School of Korea, the Mauritius College of the Air, National Open School, India, many of the national correspondence colleges/distance education centers across Africa, and a number of radio schools in Latin America. I will discuss three programs here. National Open School, India, described more fully in chapter 8 in this book, established very recently, grew from the experiences of many other long-established initiatives. The other two have been established for over 25 years: the Mexican Telesecundaria system and the Malawi College of Distance Education. These three have been chosen because they each aim at students that formal secondary schools have failed or are failing to reach and because they aim to provide the same level of education and enter their students for the same examinations as traditional secondary schools in these countries.

The National Open School:
Links with Formal School, Study Centers and Diverse Media

National Open School, India (NOS) was established by the Government of India in 1989 to extend education to those who cannot attend a regular school. NOS offers programs at three different levels, equivalent to 8, 10, and 12 years of schooling. There are four kinds of programs:

- open basic education as a foundation for secondary education;
- open secondary and senior secondary education in a very wide range of subjects in languages, humanities, social sciences, science, mathematics, and skill and vocational programs;
- open vocational programs in agriculture, technology, paramedical studies, home science, and many other fields; and
- open continuing education and life-enrichment programs in women's development and community health. In 1994 NOS enrolled 65,000 new students and the number of new enrollees rises each year.

Diverse learning channels

NOS has a number of innovative features, particularly with regard to its learning channels. After enrolling, students are given a specially designed book to help them make use of the learning materials. The modes of learning include self-instructional printed materials that are the main medium for learning, personal contact classes that are conducted in study centers on the weekends, evenings, and during holidays, audio and video programs which are available through the study centers, and an interactive bimonthly magazine.

Reaching and supporting hard-to-reach populations

A second innovative feature is its focus on disadvantaged groups such as girls, scheduled castes and tribes, and handicapped persons. The percentage of each of these groups enrolled in NOS programs exceeds the percentage enrolled in traditional schools and is expected to rise as the NOS programs extend and states establish their own open schools. In 1993, 60% of NOS students were either women or handicapped persons. A third innovative feature is the strong links which NOS has with the formal secondary schools: these act as study centers and provide student support.

The Mexican Telesecundaria: Television, Textbooks, and Learning Coordinators

The Mexican Telesecundaria (see Jamieson, Klees, and Wells) was begun in 1968 to assist the many young people in remote rural areas who had no access to secondary school.

The Telesecundaria system provides about 30 televised lessons weekly to students meeting in space provided by the local communities and overseen by classroom coordinators who are not trained secondary school teachers. These coordinators supervise groups of 20 or 30 students and are expected to help them across the whole range of subjects at the level of Grades 7, 8, and 9.

Educational television for formal and nonformal settings

The television programs each last about 20 minutes, and lessons for Grade 7 students are followed by lessons for Grade 8 and finally Grade 9 students. Thus each hour is fully occupied. The programs were initially broadcast on commercial television Channel 5, which had a relatively limited reach. However, in 1983, Mexico placed the first generation of its satellites in orbit, and a transponder was assigned to the educational system. Telesecundaria could then be beamed all across the country, and schools or communities with a parabolic antenna could receive it. In addition to changes in the broadcasting format, there have been many other improvements over the years. The television programs that began as "talking heads" became professionally produced from scripts provided by specially trained teachers. Also textbooks were developed and given to the students. These corresponded to the television programs and helped the students learn more effectively. In addition, the coordinators were given special training and a career path within the Mexican governmental system.

Cheaper and yet effective

A number of evaluations of these telecommunications systems have been carried out. These have all shown that the system is as good as traditional secondary schools at helping students learn. Although there have been different viewpoints on comparative costs, there is agreement that the system is a cheaper way of reaching remote rural areas than the traditional system (Klees, 1975; Mayo, McAnany, and Klees, 1975; Arena, 1988). The system remains an important aspect of the Mexican system today: in 1993 Telesecundaria was offered in more than 9,000 schools for nearly 600,000 students and represented 15% of the lower secondary school population. Plans include its expansion to the 20,000 communities in Mexico today without an existing secondary school and not currently served by Telesecundaria.

The Malawi College of Distance Education: Self-Instructional Materials, Radio and Face-to-Face "Teaching"

The third model is the Malawi College of Distance Education (MCDE) (see Murphy, 1993; 1992 for further details). MCDE was established in 1965 to cater for the needs of two groups: adults who wanted to continue their education and primary school leavers unable to get a place in secondary school. The demand for MCDE's courses by the second group has expanded dramatically.

Multichannel three-way teaching system

Since 1981, the number of students enrolling for a secondary education with MCDE have exceeded the number of students all the secondary schools in Malawi. MCDE utilizes a three-way teaching system, which combines good quality printed self-instructional materials, radio programs, and face-to-face teaching. Its most popular and most effective program is the study center system. Across Malawi, there are about 200 study centers.

Study centers and self-instructional materials

Study centers are established through an agreement between the community and the MCDE. First, a community asks MCDE to provide teachers and materials. MCDE provides and pays a teacher-in-charge (primary school teachers trained by MCDE) and at least one other teacher. Students enroll by sending an enrollment form and fee to MCDE and by showing evidence of this to the teacher-in-charge of the nearest study center. They are expected to attend daily during the term, study the printed self-instructional materials and listen to radio programs in accordance with a strict timetable.

Teachers as facilitators of the lessons

The teachers are expected to set exercises, help with difficult sections, and arrange for the students listen to and benefit from the radio programs. They are not expected to teach. Tests are sent in batches to MCDE for marking and returned in the same way. The available studies of the effectiveness and costs of MCDE are a little dated but show conclusively that this system was working well in the 1980s, with student numbers increasing beyond 10,000 and results in the Junior Certificate examination improving to a pass rate of about 30%.

Lower costs

The costs were significantly lower than the corresponding costs of traditional secondary schools, not only on numbers enrolled but on the all important costs of full examination pass. The studies show that, in 1988, MCDE cost about one-third as much per full examination pass as the secondary schools! Although no examination of costs and effectiveness has been conducted since then, observers' comments indicate that the system is overloaded. Student numbers have increased to 50,000, printed learning materials are in short supply and of poor quality, and the teachers do in fact teach.

Observations

As can be seen from the three cases, young people not served by traditional secondary schools can be helped in a variety of different ways. Four observations are important.

First, these three systems have shown that young people can be helped to study for and pass the same examinations as students in traditional secondary schools. This is very important if alternative systems are to gain what has been called "parity of esteem[3]" with the traditional system. Parents, teachers, and the community want children to receive equivalent qualifications and support.

A second important aspect of these three cases is their relative cost-effectiveness. These models are less costly than the traditional secondary schools for a number of reasons. The cost of the "teachers" is likely to be less, as they are not usually fully trained secondary teachers. The student to teacher ratio is likely to be higher. Finally, there are significant capital cost savings.

Third, each of the three models discussed has a credible educational organization supporting the system. This is important for a number of reasons:

- to demonstrate to others working in the provision of education that the methods and materials are the best available;
- to encourage cross-support with the traditional system; and
- to analyze problems systems and support from the point of view of the educational requirements of the learner and not the point of view of the media professional or the organizational expert.

A fourth important aspect of these models is their close link with the formal educational system. In the case of the Telesecundaria, it is part of the formal system. In the case of MCDE and the NOS, the staff are provided from the formal system and the MCDE and NOS materials are used in that system.

Solutions

Given the relative success of the three models described and the potential for replicating aspects of them in different countries, it is possible to envision theoretical solutions to the problem of access to secondary education—solutions which do not include building and staffing traditional secondary schools. One such solution might involve determining the financial resources available in country X for secondary education and utilizing these in a creative and constructive way to provide a national curriculum, self-instructional materials covering this curriculum, some face-to-face teaching, other support for students studying the materials, and an independent assessment system that certified successful students. This might be organized by a national learning center, which would provide training for the people providing the teaching and other support and assistance to students to become independent learners. Those students and parents who did not opt for this system could establish private schools.

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[3] I first heard the term from Fay Chung, then Minister of Education in Zimbabwe and now Chief, Education Cluster, UNICEF.

It is clear that this solution would not find favor with many. Government secondary schools already exist and, even in countries where less than 10% of children in the secondary school age range participate in these schools, the solution is not seen to lie in alternative modes of provision but rather in providing more of the same despite the relative expense. The inability of countries to "cut their cloth according to their measure" is only equalled by the inability of many citizens to see that, where resources are constrained, there is a direct relationship between the per-person cost of the service provided and the number of people who can receive that service.

There would be other objectors. Educators will point to the need to provide support for the many who would not be independent learners in the short term. Parents may not be happy to have teenage children not directly supervised. University faculty could be concerned about knowledge of scientific concepts. Teachers' unions might not welcome the changing role of the teacher and the increased student-teacher ratio.

There are less radical alternatives. For example, the expansion of secondary education provision can utilize some of the techniques described to provide secondary education for those who are not able to get a place in those traditional secondary schools currently in operation. (The two systems operate in tandem. All provision for increasing numbers is through the alternative system.) Several countries have tried this, but in the majority of cases the results have almost invariably been disappointing. These initiatives have not achieved parity of esteem with traditional secondary schools. They are considered a second-best, second-rate alternative to traditional schools and most students and parents, if given the choice between the alternative and the school, would choose the school. This choice is not surprising given the peer pressure, the better results, the parental expectations, and the allocation of resources.

Young People

Any solution that provides secondary education (even junior secondary education) for all young people needs to capitalize on the economic strengths and flexibility of provision of distance education while attempting to retain the status of traditional secondary schools. The following are likely to be features of any successful model:

- students attend daily in buildings that are simply and basically equipped for learning purposes;
- trained adults assist students to learn;
- high-quality, attractive self-instructional materials are available for each student;
- support is provided for underachieving pupils;
- regular monitoring and assessment of student achievement is carried out by a national agency or ministry; and
- all students in a country spend some of their educational time in the system.

Clearly, problems can be expected. These might include low expectation levels of pupils and teachers, higher dropout rates, materials supply problems, and lower achievement levels than might be expected under the traditional secondary school model. However, if all students were in the system, then the thrust would be to improve the system and not to dismiss it entirely.

It is possible to imagine two extreme examples of this model. In the first, the emphasis is on the learning materials. Trained adults who are not secondary school teachers and do not teach assist the students in using the instructional materials. The buildings are basic and the main expenditure is on the instructional materials. Students are assisted in working through the materials and given remedial assistance when needed. An outside learning agency monitors quality and provides support.

The second model is much more like the traditional secondary school, and the emphasis is on the teacher as instructional leader and on the school as monitor of quality and instructional progress. The instructional materials are used by trained (and retrained) secondary school teachers to supplement the instruction that they provide and to help them to reach many more students than they normally do. (A variation on this alternative would be to handle the short supply of good mathematics and science teachers in a way that enables them to reach many more students. Teachers in other subjects handle traditional classes.) The buildings and facilities would be in use for most of the day and the evening and would look like traditional secondary schools.

International Support

Below are a number of ideas offered for consideration by international funding agencies. These presuppose an interest on the part of particular developing countries and a willingness in these countries to experiment.

- Support the development of one of the models outlined above. Identify a country that is planning to introduce universal secondary education and willing to try the model. Resources to support that country could be provided over at least a ten-year period. Progress would be carefully monitored.
- Assist in providing input. This could include high-quality teaching and learning materials, teachers trained in the use of self-instructional materials, and development of a particular low-cost but effective medium, such as radio.
- Establish an international teaching/learning materials development center and work with organizations such as the Commonwealth of Learning and the International Council for Distance Education to mediate the materials produced.

There are other possible areas of support, but the three just mentioned would contribute to a better understanding of what it will take to develop universal secondary education of reasonable quality.

References

AFTHR. (1990). *Education in sub-Saharan Africa: Updated statistical tables* (AFTED Technical Note No. 1). Washington, DC: The World Bank.

Arena. E. A. (1988). The Mexican telesceundaria system: A cost analysis. Paper presented to a workshop on Using Technology for Education and Training, the Economic Development Institute, The World Bank, Washington D.C.

Jamieson, D. T., Klees, S. J., & S. J. Wells. (1978). *The costs of educational media: Guidelines for planning and evaluation.* Beverly Hills, CA. Sage Publications.

Klees, S. J. (1975). Instructional technology and its relationship to quality and equality in education in a developing nation: A case study of instructional television in Mexico. Unpublished doctoral dissertation, Stanford University.

Mayo, J. K., McAnany, & Klees, S. J. (1976). The Mexican Telesecundaria: A cost-effectiveness analysis. *Instructional Science,* 4, 193-236.

Murphy, P. (1992). Costs in full-time second-level education using distance teaching methods in Malawi. In P. Murphy & Zhiri (Eds.) *Distance education in anglophone Africa: Experience with secondary education and teacher training.* Washington, DC: EDI World Bank.

Murphy, P. (1993). Costs of an alternative form of second-level education in Malawi. *Comparative Education Review 37* (2).

Psacharopoulos. (1994). Returns to investment in education: A global update. *World Development 22* (9), 1325-1343.

UNESCO. (1991). *World education report 1991.* Paris: Author.

UNESCO. (1993). *World education report 1993.* Paris: Author.

UNESCO. (1994). *Donors to African education: A statistical profile of education in sub-Saharan Africa in the 1980s.* Paris: Author.

6

Multichannel Solutions for Female Education: Focusing on Learning

Andrea Bosch

Enthusiasm and Opportunity

Education of women and girls is in the limelight. The participation of women in all areas of development is essential not only for achieving social justice but also for reducing poverty and contributing to overall national economic growth (Subbarao et al., 1994). Compelling research reveals strong evidence that the level of education girls attain has a direct and measurable impact upon family health, income, child and maternal survival, and family size (e.g., see Hertz, 1991; King & Hill, 1991; UNESCO, 1993). Girls' participation in education also impacts sustainable development in areas such as the environment, where women's decisions weigh heavily in the management of population pressure and natural resources (Subbarao et al., 1994). Although these arguments are not new, a deeper understanding and appreciation of the social and economic returns to girls' education is growing internationally.

The increased awareness of the importance of education for women and girls has yet to break down many of the obstacles that have traditionally served to limit opportunity, however. The majority of the out-of-school population is still female, and the general expectation is that girls should conform to the standard school environment that continues to favor boys. Dropout, failure, and repetition are higher among girls, and girls generally do poorer on national examinations (Odaga, Adhiambo, & Heneveld, 1995). Despite the identification of barriers to female education, the educational delivery systems used and environments for learning in most developing countries have failed to adapt sufficiently to enhance learning among female students.

The costs of expanding formal education structures to accommodate significant new enrollments of girls are also prohibitive in many countries. Buildings and trained teachers are expensive, and

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without considerable attention to the quality and content of the education being delivered, there is no assurance that gender disparities and poor achievement will decrease unless other changes are also made. It is not altogether surprising, then, that while the total enrollment of boys and girls in all levels of education has expanded dramatically over the past 30 years, gender disparities remain high, and females still lag far behind their male counterparts in most countries, particularly in Africa, the Middle East, and South Asia (Chowdhury, 1993).

Key Issues in Girls' Education

Research on gender equity and education conducted over the past two decades has identified a number of key determinants to the participation and achievement of girl learners.

- **Distance and travel to schools**. The need to travel long distances to school has often been cited as a major determinant for female school attendance. Research shows that parents more often perceive a physical and moral threat to their daughters' security if they have to travel, especially when distances are great. Attendance decreases dramatically if boarding is required (Tietjen, 1991).

- **Single-sex schools**. Research in Thailand, Swaziland, Nigeria, Jamaica, Malawi, and Kenya shows that girls achieve more when they go to single-sex schools, despite the fact that girls' schools are often of much poorer quality (Jimenez & Lockheed, 1991; Lee & Lockheed, 1991; Lockheed & Komenan, 1991; Hamilton, 1991; Lewis, Horn, Kainja, Nyirenda, & Spratt, 1991). The lack of separate toilet facilities in coed schools is also cited as a deterrent.

- **Female teachers**. Many research studies indicate that girls do better and stay in school longer when they are taught by female teachers. Teacher experience, attitude, and teaching style have also been found to be major contributing factors to girls' persistence and achievement. Some studies, however, indicate that gender of the teacher may not be the key factor (Bellow & King, 1991).

- **Poverty and costs of education**. Direct and indirect costs of girls' education are important determinants of female participation in education, particularly when correlated with the economic status of the family. Poverty is a major deterrent to female participation in education.

- **Opportunity costs**. Research also suggests there are greater opportunity costs associated with educating the female child. Girls are often involved in important work such as care of younger siblings, household chores, and food preparation (Teas, 1992). Research suggests the greater the opportunity cost to the family, the less likely the child will attend school. One study conducted in Mozambique found "the single most important factor that contributed to bad school achievement was work for the survival of the family" (Odaga et al., 1995).

- **Relevance of curriculum**. The relevance of the curriculum is often identified as a key determinant for female achievement (Tietjen, 1991). For example, some researchers suggest girls do poorly in math and science not because they do not have the aptitude but because it is not related enough to immediate gains, such as changes in their daily lives, their roles in traditional society, or later, in potential job markets. Others point out that textbooks and materials are often gender-biased or culturally irrelevant (Tietjen, 1991). The Escuela Nueva experience in Colombia, on the other hand, suggests that using situations drawn from daily life to construct learning activities increases one's academic self-concept and imparts a sense of purpose for both boys and girls (Schiefelbein, 1991).
- **School schedule**. The conventional daytime school schedule has been found to limit female participation because of conflicting responsibilities in the household. Classes after work and split shifts have increased female attendance and persistence (Naik, 1991; Herz, Subbarao, Habib, & Raney,1992).
- **Traditional or cultural constraints**. Traditional constraints such as lower appreciation or expectations for the female child (including, in some cases, less attention to nutrition, health, and self-esteem) may also contribute to lower attendance and achievement among girls. Traditional values often work against opportunities for girls to attend and succeed in school, as school is seen as a threat to their societal roles or perceived as superfluous.
- **The quality of instruction**. The quality of the learning environment has an impact on school attendance. Girls' enrollment and achievement may be reduced because of low educational quality and ineffective methods of encouraging participation by girls within the classroom or learning environment (Chowdhury, 1993).

A Framework Focused on Learning

New and innovative educational strategies are needed that better integrate what has been discovered in various fields related to education and learning and that deliver it in ways that will better reach female learners, given their current constraints. Multichannel learning offers a framework that focuses first on the conditions that promote learning and then on building integrated systems that can help bring education to girls in a more flexible and affordable manner.

Elements of multichannel learning strategies have been piloted and evaluated over the last two decades. They have been tested in varying degrees in interactive radio instruction, formal and nonformal education projects, and in communication and the media. Particular aspects of a multichannel learning strategy have been proven effective within development communication and within behavior change programs related to HIV risk reduction, environmental education, and family planning. Elements of gender sensitization and social mobilization have contributed to changing attitudes and perceptions, and certain systems of open learning such as the National Open School, India, and OLSET in South Africa have created new and interesting ways to link systems of education while increasing the learning opportunities available to students outside of the mainstream.

A multichannel approach to girls' education, for example, would align several learning channels and delivery systems so that the potential for learning is increased and the specific issues in girls' education are addressed directly. Thus, methods identified to promote learning developed under the auspices of distance education, nonformal and formal education, anthropology and psychology, and development communication can be introduced into the design of the total educational package rather than as disconnected activities.

For women and girls, multichannel learning strategies offer the potential to overcome several deterrents to education simultaneously. A simultaneous attack on multiple constraints to girls' education has been shown to work in Bangladesh, China, Korea, and Sri Lanka. In these examples, a more integrated approach addresses several of the known obstacles to girls' education at once. Education projects designed to overcome a single barrier to girls' education, on the other hand, have been reported to have little or no effect (Chowdhury, 1993).

Applying Multichannel Options to Female Education

By using carefully planned combinations of delivery systems and learning channels, women and girls who are often excluded will, by design, be reached. Here are some examples of how a multichannel approach might function given the identified barriers.

Decreased Costs

Cost is a major deterrent to educating females. A variety of studies have shown that distance education programs have the potential to be more cost-effective than their conventional education counterparts (Curran & Murphy, 1992). These studies do not necessarily take into account the opportunity costs to the family associated with educating the female child or the quality of the program; yet, if women or girls do not have to travel and can maintain many or all of their household duties, the opportunity cost to the family is reduced. Distance programs may also decrease the recurrent costs and safety issues associated with training teachers in remote areas.

Reducing the Distance to Schools

Until recently, most of the recommendations to reduce distance to schools have concentrated on constructing schools, increasing the number of boarders, or creating satellite schools closer to home (Herz et al., 1991). For this to succeed, a strategy must be found to address the increased costs associated with building schools, training female teachers, and parental resistance to boarding their daughters.

Distance from school (and real or perceived danger to the female student) is a key constraint to female education that may be overcome by incorporating distance education strategies into educational programs. Related issues such as separate toilet facilities and parents' fear of strangers near school facilities are also more easily overcome in a system that is more locally accessible and capitalizes on delivery systems such as the mail, radio, or parallel social mobilization efforts, as well as local study centers. Distance education strategies are complementary to many of the other strategies listed here.

Flexible Schedules and Self-Instructional Materials

As mentioned, one of the key constraints related to the opportunity cost of educating females is the rigid schedules of conventional schools (Herz et al., 1991). Multichannel programs that capitalize on self-instructional materials and flexible or convenient hours can increase educational access and relevance. Research studying school schedules in India and China has also shown that opportunity costs associated with traditional roles may be reduced through programs that are sensitive to community constraints and gender roles (Herz et al., 1991).

Teacher Training

Distance education and communication methods can help deliver teacher training to both female and male teachers in remote areas and reduce the need for excessive travel, boarding, and face-to-face training programs. Teachers can learn how to organize activities which maximize use of local learning channels and opportunities for interaction among learners and with others.

Multichannel learning strategies may also be designed so as not to require the high-level qualifications of teachers of traditional programs. In many cases radio facilitators or teachers unskilled in a particular topic can guide a lesson.

A Well-Integrated Approach

Many nonformal education programs around the world demonstrate the need and success of adapting schedules and materials to meet the realities of the lives of girls and women and integrating the approach into daily life. Organizations such as the Bangladesh Rural Advancement Committee (BRAC) have shown that some of the limiting factors to girls' and women's education can be overcome when attention is paid to enhancing possible learning opportunities and adding status to learning (Bangladesh Rural Advancement Committee, 1992). The Forum for African Women Educationalists (FAWE) has had similar experience. One of its goals is to increase the use of radio and other channels of education for the purposes of girls' education ("FAWE, Second Newsletter on Goals," 1994).

Links to Other Programs

Programs using alternative delivery systems or nontraditional learning environments are often much stronger and receive higher regard within communities if they are linked to nationally accredited formal educational systems. Multichannel learning aims to link formal and nonformal education so that they better support and reinforce each other. Other linkages such as parallel accreditation between distance education programs and formal education programs, parallel curricula and materials, and parallel teacher training programs ensure that basic standards are consistent and students learning at a distance have the same opportunities as others. Evidence suggests that the quality and perception of alternative programs that are not linked to formal education are lower and the opportunities to learners are fewer when links are not created (see Paud Murphy's discussion in chapter 5).

Responding to the Psychology of Learning

The psychological argument for multichannel learning for girls is perhaps one of the strongest. Multichannel learning arises from the premise that people learn through a series of processes including interaction, practice, and communication. This can occur in a formal setting, a nonformal setting, or through the community and the media. The greater the number of learning channels that reach and are useful to the learner, the greater the possibility for learning to take place. The psychological desire to learn is stimulated in a variety of ways, many of which may not be fostered for girls in traditional classrooms but can be introduced and reinforced in a well-constructed multichannel learning strategy. Examples include role models and situations that are created specifically to include and show possibilities to the girl child.

Emphasizing Local Channels and Interactivity

In many traditional classrooms, girls are rewarded less frequently and are not as actively involved as boys. Equity and interactivity are not emphasized. Current educational pedagogy stresses the need to maintain interactivity in learning, even when education is delivered in an unconventional manner. A variety of channels for learning can be set up that require a high level of interaction on the part of girls and boys. If the programs are well-designed, as was the case in Costa Rica (see chapter 11), effective interaction can take place with the learning channel.

Creating Role Models and Learning Environments

One of the major assets of multichannel learning is the potential to incorporate visions of a real, but improved, world. During the design of radio or video scripts, for example, role models and situations that support the increasing status of women can be demonstrated by others. Not only can real people and places be used, but imaginary ones that show better participation and opportunities for girls can be introduced. In the imaginations of the listeners, these characters and situations are vital and important.

Combining Knowledge with Practice

Strategies that use more than one learning channel to promote learning and reinforce positive educational experiences are not new. Multichannel programs have long existed in developing countries as a means to overcome educational obstacles. While large-scale programs have rarely narrowed the gender gap, smaller scale initiatives that have used nonformal education and social mobilization techniques or have incorporated communication strategies into their delivery systems have had a measurable impact. Examples include local systems for small schools in Morocco and the use of diverse media such as radio and print in learning centers in Bangladesh, Mongolia, and the Dominican Republic (UNESCO, 1991; see also chapter 12 of this book). Some successful programs have focused on those factors directly connected to opportunity costs and have deliberately linked systems of childcare to education programs. These either rotate caregiving responsibilities and offer flexible schedules or emphasize self-instructional modes of learning and multigrade systems. Examples include India (see Mukhopadhyay, chapter 8) and the Gambia (Chowdhury, 1993) (for examples from the Philippines and Costa Rica, see chapters 9 and 11). These models demonstrate the benefits of working in coordination with traditional community structures to achieve better educational outcomes.

On the other hand, multichannel learning strategies that attempt to incorporate the full mechanics of successful small-scale projects on a larger scale and still link them to the formal system may be desirable but strategically or economically unlikely. Multichannel learning does not by definition mean bringing all good projects to scale, but rather gleaning the main factors relevant to providing more opportunities for learning to students and finding effective means to deliver them well and cost-effectively. The deliberate composition of the integrated package and the interactions within the learning environment, therefore, are more significant than the fact that multiple types of educational systems are represented.

Approaches such as interactive radio instruction combine radio and other channels of learning that have been tested and show that the assets of a distance education delivery system can be successfully integrated into the mainstream formal education system on a national or local level to enhance quality (Fryer, 1995). The possibility of addressing several constraints to girls' education becomes more practical as the advantages of bringing higher quality education closer to home become an option.

Pulling It Together

While there is no doubt educating women and girls is important, it will cost money. In an effort to uncover options that can be immediate and high quality, multichannel learning provides a valuable framework from which to begin. Evidence also suggests that using multichannel learning strategies may be more cost-effective, particularly over time, and more effective due to the integration of learning channels and the techniques employed.

An increasing number of regional networks and international agencies cite as one of their objectives the need to experiment with learning channels that conflict less with traditional constraints and provide opportunities for women to receive both an education and the accreditation to make it useful. With this added focus come new pressures, such as how to achieve more and better educational systems that address the constraints of educating girls and other populations excluded from the mainstream of power and education. The attractiveness of a multichannel learning strategy arises from the potential to not only address some of the constraints of educational delivery directly, but also to go one step further to design integrated programs that improve the mechanics and the potential of the learning environment.

References

Anderson, M. B. (1986). *The Gender Manual Series: Gender issues in basic education and vocational training*. Washington, DC: US Agency for International Development.

Anzalone, S. (1993). *Expanding the vision of basic education through multi-channel learning* (Development Communication Rep. No. 82). Washington, DC: US Agency for International Development.

Bangladesh Rural Advancement Committee. (1992). *BRAC at 20: 1972-1992* (Annual Report). Bangladesh: Author.

Bellow, R., & King, E. M. (1991). *Promoting girls' and women's education: lessons from the past*. Washington, DC: The World Bank.

Bosch, A. (1993). *Multi-channel learning in practice: case studies from India, Costa Rica, and South Africa* (Development Communication Rep. No. 82). Washington, DC: US Agency for International Development.

Chowdhury, K. (1993). *Women's education: Barriers and solutions*. Washington, DC: The World Bank.

Curran, C., & Murphy, P. (1992). Distance education at the second level and for teacher education in six African countries. In P. Murphy & A. Zhiri (Eds.), *Distance education in anglophone Africa: experience with secondary education and teacher training* (EDI Development Policy Case Series, Analytical Case Study No. 9). Washington, DC: The World Bank.

Floro, M., & Wolf, J. M. (Eds.). (1990). *The economic and social impacts of girls' primary education in developing countries*. Washington, DC: Advancing Basic Education and Literacy Project and US Agency for International Development.

Hamilton, M. A. (1991). Performance levels in science and other subjects for Jamaican adolescents attending single-sex and coeducational high schools. In K. Tietjen, *Educating girls: Strategies to increase access, persistence, and achievement* (C. Prather, Ed.). Washington, DC: Advancing Basic Education and Literacy Project and US Agency for International Development.

Herz, B. K., Subbarao, M. H., & Raney, L. (1991). *Letting girls learn: Promising approaches in primary and secondary education* (World Bank Discussion Paper No. 133). Washington, DC: The World Bank.

Hyde, K. (1991). Improving women's education in sub-Saharan Africa. In E. M. King & M. A. Hill (Eds.), *Women's education in developing countries: Barriers benefits, and policy* (PHREE Background Paper Series). Washington, DC: The World Bank.

The International Bank for Reconstruction and Development of The World Bank. (1990). *Women in development: A progress report on the World Bank initiative*. Washington, DC: The World Bank.

Jimenez, E., & Lockheed, M. E. (1991). Enhancing girls' learning through single-sex education: Evidence and a policy conundrum. In K. Tietjen, *Educating girls: strategies to increase access, persistence, and achievement* (C. Prather, Ed.). Washington, DC: Advancing Basic Education and Literacy Project and US Agency for International Development.

King, E. M., & Hill, A. M. (Eds). (1991). *Women's education in developing countries: barriers, benefits, and policy* (PHREE Background Paper Series). Washington, DC: The World Bank.

Lee, V. E., & Lockheed, M. E. (1991). The effects of single-sex schooling on student achievement and attitudes in Nigeria. In K. Tietjen, *Educating girls: Strategies to increase access, persistence, and achievement* (C. Prather, Ed.). Advancing Basic Education and Literacy Project and US Agency for International Development.

Lewis, S. G., Horn, R., Kainja, C., Nyirenda, S., & Spratt, J. (1991). Constraints to girls' persistence in primary school and women's employment opportunities in the education service. In K. Tietjen, *Educating girls: Strategies to increase access, persistence, and achievement* (C. Prather, Ed.). Washington, DC: Advancing Basic Education and Literacy Project and US Agency for International Development.

Lockheed, M. E., & Komenan, A. (1991). School effects on student achievement in Nigeria and Swaziland. In K. Tietjen, *Educating girls: Strategies to increase access, persistence, and achievement* (C. Prather, Ed.). Washington, DC: Advancing Basic Education and Literacy Project and US Agency for International Development.

Mayo, J. K., & Chieuw, J. S. F. (1993). *The third channel: Broadening learning horizons*. New York: United Nations Children's Fund.

Murphy, P. (1993). *Multi-channel solutions: The prospects of open secondary education* (Development Communications Rep. No. 82). Washington, DC: US Agency for International Development.

Naik, C. (1991). An action-research project on universal primary education—the plan and the process. In E. M. King & M. A. Hill (Eds.), *Women· ·s education in developing countries: Barriers, benefits, and policy* (PHREE Background Paper Series). Washington, DC: The World Bank.

Odaga, A. and Ward Heneveld. (1995). *Schooling and girls in sub-Saharan Africa*. Washington, DC: The World Bank.

Office of Women in Development Bureau for Program and Policy Coordination Agency for International Development. (1989). *Women in development: A report to Congress by the US Agency for International Development*. Washington, DC: US Agency for International Development.

Resnick, L. B. (Ed.). (1989). *Knowing, learning, and instruction: Essays in honor of Robert Glaser*. Hillsdale: Lawrence Erlbaum.

Schiefelbein, E. (1991). Seven strategies for improving the quality and efficiency of the educational system. In K. Tietjen, *Educating girls: Strategies to increase access, persistence, and achievement* (C. Prather, Ed.). Washington, DC: Advancing Basic Education and Literacy Project and US Agency for International Development.

Subbarao, et al. (1994). *Enhancing women's participation in economic development: A World Bank policy paper*. Washington, DC: The World Bank.

Teas, M. M. (1992). Improving educational equity for girls through distance education. In P. Murphy & A. Zhiri (Eds.), *Distance education in anglophone Africa* (EDI Development Policy Case Series, Analytical Case Study No. 9). Washington, DC: The World Bank.

Tietjen, K. (1991). *Educating girls: Strategies to increase access, persistence, and achievement* (C. Prather, Ed.). Washington, DC: Advancing Basic Education and Literacy Project and US Agency for International Development.

UNESCO. (1990). *Basic education and literacy: world statistical indicators*. Paris: Author.

UNESCO. (1993). Statistical yearbooks, 1980-1992. In UNESCO for the International Consultative Forum on Education for All, *Status and trends: Education for all*. Paris: Author.

UNESCO for the International Consultative Forum on Education for All. (1993). *Status and trends: Education for all*. Paris: UNESCO.

UNICEF. (1993). *Reaching the unreached: Non-formal approaches and universal primary education.* New York: United Nations Children's Fund.

United Nations. (1991). *Women: Challenges to the year 2000.* New York: Author.

7

Multichannel Learning at the Community Level

Michael Laflin and Micael Olsson

Learning has been taking place for as long as people have made discoveries about their worlds and have passed them to succeeding generations. Traditionally, learning took place within communities and reflected their cultural knowledge and priorities. When nations began to view education as a national enterprise, national standards and "mainstream" systems developed. Today, some argue that education has become too much a national enterprise and that it has lost much of its relevance for communities. In some countries, communities and schools themselves are now reasserting control over the design and management of learning.

This chapter examines ways in which national, mainstream systems can be complemented by community learning channels. The focus is not on replacing mainstream systems, or even on examining ways that multichannel learning defines itself by its capacity to feed into mainstream systems. Mainstream systems are best at producing the hamburger of education--the simple, filling, inexpensive, manageable, basic, and relatively unchanging food for millions. Community learning systems need to reflect the strength of the bistro—the individualized, imaginative, multidimensional, and unique fare that makes life interesting and tickles the senses.

It is not a fanciful notion. Community learning has often been multichannel learning. Sometimes formalized education systems, such as the Liberian Sande and Poro "bush schools," were the centerpieces of learning. But in most societies learning channels typically consisted of apprenticeship systems, daily informal "lessons" from parents and peers at work and play, stories, dramas, songs, and the teaching provided by religious leaders. "Learning" included socialization into the community culture, passing on

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indigenous technical knowledge, and apprenticeships where young learners paid master craftsmen to teach them modern technologies such as car mechanics or welding. All of these were elements of quite complex multichannel learning systems.

In contrast, educators' use of multiple learning channels has generally been conservative. What we think of as representing the main "modern" learning channel in most communities, the primary school, is ancient in concept, material resources available, and procedures. In most of the world's towns and villages, for as long as schools have existed they have consisted of teachers using books, slates, or blackboards in small, often one-room schools. Their organization into sessions of one calendar year has dominated the design, management, and assessment of learning. Additional learning channels such as radios, computers, peer learning groups, and community resources have been slow to enter the mainstream of formal education systems.

Many communities in rural Africa, even those without electricity, now have access to radio, video, movies, magazines, and newspapers. Technologies such as two-way radio and packet radio have been available for decades, and educators in Canada and Australia have long used them with remote learners. Now, faxes and electronic mail can be received and transmitted in the most remote places. As a result, growth in electronic communication systems is making it easier to move ideas than to move people and paper.

Application of these new technological capacities to community learning has lurched between the prosaic ("Let's put the teacher in front of a blackboard in the TV studio...") and the quirky ("Let's put a computer in every hut..." or "Welcome to Fax University..."). New community learning channels have broadened the knowledge base and expanded opportunities for learning, but educators have yet to learn how best to use them. Sometimes scientific explanations have clashed with traditional knowledge and practices, for example, in attributing cause and effect in medical matters and then in proposing preventive measures or prescribing treatment. But a bigger problem than the content of knowledge has been the view that learners are empty vessels waiting to be filled. Designers of communication, extension, and education programs have often ignored both the knowledge and the learning systems that already reside in individuals and communities. In by-passing community learning systems, educators overlooked a resource they might otherwise have used and, in some instances, underestimated a powerful competitor to their new learning. In the worst cases, the result was a kind of cognitive stalemate: indigenous systems of knowledge and practice were destabilized by new channels of learning, and the new systems were incompletely adapted, misunderstood, or rejected altogether.

Education for What?

Basic education in communities can, and probably should, go beyond the skills taught in grades 1-4 of primary school. For a start, education should include opportunities for every person in the community, not just those who want basic literacy and numeracy skills, for example. Ideally, education should be continuous and should furnish people with the skills to manage their lives and participate fully in the governance of their communities. It should help families to plan their size and protect their own health. It should help communities to manage their resources now and for the future. And if the structure of learning is to answer community needs, it should provide knowledge and information in ways that people can reorganize and integrate for themselves, so that it becomes meaningful for each person.

We rarely operate under perfect circumstances. The challenge to those who design multichannel learning systems is to design a system that is responsive now and is sufficiently flexible to respond to changes in the future. Instructional designers, curriculum developers, and distance educators have often designed educational packages as if they were developing the only source of education the learner would have. Multichannel learning designs imply a larger bank of learning opportunities, which can be accessed through multiple channels for many purposes.

Can We Harness It or Only Describe It?

Multichannel learning in communities goes on whether we do anything about it or not. For those who want to build on community learning channels, the first challenge is to describe the systems present. More than likely, this will take place within an existing agenda—preserving a forest, child survival, educating adults for employment, promoting more equitable governance, countering violence among youths in inner cities, or developing a geographical region. Often there is no clear "curriculum" in the sense that educators depend on a curriculum to define what they should teach. A curriculum may be developed out of evident needs—for example, how to prevent deaths from pesticides or how to manage early childhood centers—or may be derived from an iterative process of discussion with learners about learning needs in their lives—how to compete for jobs, for example, or how to increase agricultural production.

Multichannel learning in communities may serve a mix of highly specific educational or behavioral objectives but may also include more broadly based social and educational initiatives that include family members or whole communities. It may include an economic development component that provides skills training, a mixture of community-originated initiatives and externally conceived activities, and variety among the strategies to accommodate different audiences and learning styles. How then will strategies be developed?

The Laiwo Karen multichannel learning program in Thailand provides an example. The design anticipates a program that changes over time in response to community demand, one that is intimately tied to local resource management (a high-profile community priority), expands traditional learning channels to include contemporary ones, and both reinforces a locally important set of core values and traditions and boldly tackles new directions for the future.

Laiwo Karen Multichannel Learning

The multichannel learning program being developed among the Laiwo Karen in Western Thailand benefits from a convergence of local and international interests. There is a strong desire across Karen communities to strengthen cultural knowledge and appreciation among the younger generation. This local interest converges with a concern among national and international conservation organizations that the best option for protecting the region's biodiversity is for the Karen to continue as the custodians of the Thung Yai forest where they live.

Traditional channels of learning among the Karen rely primarily on intergenerational apprenticeships that are now under serious threat. Karen elders are concerned that the encroaching values of popular society are weakening their cultural standards for integrating conservation with development. They fear Karen culture will gradually erode unless traditional channels of cultural learning are augmented and further reinforced by more powerful contemporary ones.

Multichannel learning, in this instance, is integrated with the social fabric of the community because forest conservation, the pivotal focus, is intimately related to both the economic survival of the Karen and their way of life as a people. As a result, the community is highly motivated to join in the participatory processes that direct it. A network of local discussion groups will become the centerpiece of the program, with conclusions being channeled to a Karen focus group involving district administrative officials, Karen elders, official headmen, monks, and other selected leaders who meet periodically to review and advise on program development. This creates the need for a flexible program in which a variety of modules, each of different duration and projected life span, rise and fall over the years.

Karen multichannel learning is designed to rely on the nonformal education officers, monks, elders, and Wildlife Fund Thailand (WFT) staff currently engaged in related activities during the time a fully sustainable local support system is being developed. WFT Karen staff will initially serve both as facilitators in "smoking groups" or discussion groups and as monitors for the cultural learning activities. The two nonformal education officers currently under the Royal Department of Education will serve as supervisors to local monks already involved in Karen language instruction.

The venue differs from that of classroom basic education as well. Karen multichannel learning activities will be physically accommodated in temple facilities, on the verandas of larger homes, in some classrooms (after hours), at public festivals and in village squares, and even in gardens and forests on occasion. Some learning activities will follow regular meeting times, and some will be more flexibly scheduled and will be seasonal.

Karen multichannel learning has three distinct but interrelated components that initially span a three-year cycle. These are *1*) a network of discussion groups, *2*) a range of practical hands-on cultural learning activities, and *3*) interactive Karen language instruction. The discussion groups themselves, supplemented with learning aids, build consensus regarding core values, sustainable resource management, and future directions for development for the six clusters of villages. The practical hands-on cultural learning activities address concerns arising from the discussion groups and center largely around traditional Karen practices that have been responsible for sustaining Karen natural resources in the past. Karen language instruction uses aspects of these activities to strengthen literacy and language retention skills. Each component draws on and reinforces the other, compounding the range of learning channels contributing to Karen cultural reinforcement overall.

Multichannel learning elevates the more traditional learning channels while using contemporary channels to further reinforce them. The Karen are anxious to increase exposure of their young people to Karen values and culture at different stages throughout their development. Every Karen is introduced to certain basics about language, culture, practices of sustainable agriculture and land use, sound forest management, herbal medicines, and a world of music, dance, and art, through mentor-apprentice relationships defined by kinship ties. These channels of cultural transmission involve learning-by-doing through *1*) group activities teaching social behavior, mores, and gardening and resource-management practices; *2*) apprenticeships, including shamanism, ritual practices, weaving, and instrumental skills; and *3*) formal classes for groups of younger people, in dance, for example. Although the written word has played a role in Karen life for some time, the dominant learning channels have been oral and interactive. Now, Karen communities want to incorporate class groups and other contemporary channels to further strengthen cultural learning and yet maintain the more traditional mentor-apprentice relationships at the same time.

Laiwo Karen Multiple Learning Channels

Much of the curriculum for Karen multichannel learning is being drawn from material being pulled together for a Karen "Big Book." The collection, being developed by Karen WFT staff, includes a mix of legends and stories, traditional medicinal practices, Karen flora and fauna, gardening and hunting rituals, and a comprehensive Karen dictionary and glossary of terms. It can be expected to continue to evolve into a rich record of all aspects of Karen life and culture.

While written transcriptions and the development of learning aids add important new channels, much of the actual delivery will be the familiar collaborative oral discussion familiar to the Karen. In fact, the interactive dialogue led by Karen elders and the learn-by-doing activities that emerge from it will contribute to the Big Book collection as much as they draw from it. This is in keeping with the Karen view of culture as a dynamic process undergirded by more static core values. Karen cultural learning will continue to involve a mixture of capturing traditional knowledge and adapting appropriate new knowledge to current development needs.

Plans for Karen multichannel learning include a number of low-cost print materials. For the most part, these will be generated within the community using typewriters with Karen script to cut stencils for hand-powered duplicators. Covers or center-spreads with photos will be printed outside the community and inserted at the point of binding. Small inexpensive publications by topic will be produced in preference to larger combined ones in order to be responsive to the dynamic nature of the learning process. One or two booklets dealing with Karen sustainable forestry and agricultural practices will be Karen-Thai diglots of higher quality. These will be used in the schools and in the monitor-led learning activities.

The print materials will be augmented by *1*) audiocassettes featuring the voices of great storytellers and respected spiritual and cultural leaders and *2*) albums similar to flip-charts with enlarged laminated photos of revered people, sites, and events. Other audiocassettes and monitor guidebooks will support the training of Karen instructors and monitors.

Videos, posters, and fine art performances and displays will come into play at seasonal festivals throughout the year. Video provides a powerful medium for transmitting some of the complexity of certain rituals that may be difficult to describe with linear text. Although there is no electricity in the area, there are several major festivals during the calendar year where electricity powered by generators is regularly used. Poster displays aimed at building public awareness and highlighting effective resource management practices will be set up at the festivals as well.

In chapter 2, Chieuw and Mayo discuss three interrelated domains of multichannel learning that are aptly illustrated by the Karen design. Participatory learning emerges out of the network of discussion groups where local issues are articulated and the learning needs associated with them identified. Development communication approaches are as diverse as hands-on demonstrations, informed consensus building, radio-assisted language instruction, and festival poster displays. Karen social mobilization campaigns gain strength with each effort because of the blend of popular and leadership support. The synthesis of all three yields a multichannel learning program.

Designing Multichannel Learning Strategies at the Community Level

At the community level, several design issues arise for program planners.

- Although educators have generally designed for only one or a few channels, such as textbooks and the teachers' use of them, their learning options would be increased if they considered other community channels that they do not control but may be able to use.
- If educators do decide to take advantage of other channels, program designers must identify and harness, or at least work alongside of, the other channels operating in a community. They must decide which channels are most influential for a given topic and analyze how to mold most effectively their own messages and channel use.
- Multichannel programmers generally try to select an optimum mix of learning channels to meet the different learning styles, the differential access to channels that various learners enjoy, and the different knowledge that learners bring. But limited resources are likely to dictate that something less than an optimum strategy can be afforded, so programmers face major challenges to their creativity in choosing learning strategies.

- If instructional designers accept that every learner brings a body of knowledge, attitudes, and behaviors with them, and accept that other channels are continually influencing learning, then they must also accept that theirs is an increasingly interactive and constantly changing role in learning. The capacity for people to travel and experience greater variety in their lives and the astounding expansion of popular media have increased most people's learning choices and has diminished the power of the single programmer. That is good for education, but it is imposing a new set of conditions for the instructional designer.

Designers need to understand what resources they can use to deliver learning. A description of the channels available includes communications infrastructure such as electronic media, social networks within the community, patterns of relationships among community members and groups, perhaps a calendar of significant events, and what UNICEF refers to as a situational analysis that is a map of interlocking, perhaps competing, interests among the various stakeholders likely to be affected by the changes that are planned. The outcome is an inventory of presently used learning channels, how each one is used and for what purpose, and what potential it offers for contributing to the purpose at hand.

Can we move from description to management of multiple learning channels? In a limited sense, we can enlist the willing support from the community for a purpose that the community approves of, although the chances are high that in doing so we will antagonize some sections of the community. Not everyone wants to see women educated, forests preserved, or sanctions against smoking.

The biggest challenge is to move beyond a short-term campaign that pays high prices for multimedia marketing of a single learning objective, declares victory, and retires. In Brazil, for example, while the early learning gains from a breast-feeding campaign were great, within a few years these gains were all but lost. Multichannel learning will be truly valuable if it takes a longer view and promotes programs that have scope for self-renewal, the opportunity for revision and redirection by communities of learners as their needs change, and some measure of self-management by the users.

We know that it works on a small scale because we have seen it working. Equally, we have reason to be skeptical that it can work on a large scale because large systems generally lack the intrinsic flexibility that multichannel learning requires.

Management of multiple channels can only really happen when learning is responding to a limited and describable set of objectives and when some person or agency controls it. What can be done about the undisciplined array of learning opportunities and needs that should also characterize multichannel learning in communities? Experience with community radio suggests that there are ways to facilitate rather than manage community learning channels to give them greater purpose and direction. In order to be accepted as facilitators, community radio stations in countries such as Bolivia, Nicaragua, and Liberia met several criteria.

- In order to be accepted as a facilitator, the radio stations had to gain community support and identification. This was accomplished by using local languages and training community volunteers.
- Because controlling access to learning and knowledge placed them in a position of power in the community, the stations took pains to ensure that they represented and regularly sampled a broad range of community opinion.
- Because community learning and the free flow of accurate information is clearly related to community decision-making, independence of community power structures was very important. The radio stations established the right to offend some of the people some of the time and demonstrated that they represented all of the people, not merely a select few.
- Open, but not necessarily free, access to learning was important, so that people could take advantage of opportunities if they really wanted them.

In Liberia, community radio stations acted as learning posts. They coordinated with other institutions in the community that provided services in agriculture, health, family planning, and education. This promoted multichannel approaches in a real and natural way. Liberian stations did more than broadcast. They built fish ponds as part of a broader nutrition campaign. They covered trials of corrupt local officials as part of civic education in practice. They broadcast programs for teachers and promoted parent and teacher associations in order to strengthen links between schools and the community. They aired community discussions about agriculture and natural resources, thus educating the community to consider a wider range of issues in planning for the future. They broadcast programs from the local market so that people could state what was on their minds and vent their frustrations. And all of this took place under military rule.

Community learning can be organized around other unifying issues. In Papua New Guinea, the management of resources provided such a theme. Donors stepped in to help coffee farmers learn how to manage a particularly malignant form of rust that was wiping out coffee trees. At the same time, conservation of forests and other natural resources was both a local and an international concern. Two other issues, the establishment of stronger community governance mechanisms and adult literacy, fed into farming and conservation themes and led to the emergence of broad-based community learning strategies that drew on many formal and informal channels. The Ministry of Agriculture developed video-based training programs on coffee farming practices. The adult literacy program developed printed materials in local languages and face-to-face strategies that drew on community-based tutors. Traditional governance systems were strengthened and expanded through education. Forest management strategies built on indigenous knowledge but integrated it with modern practices, so that coffee trees and forests could coexist. New nonforest products were developed to provide a stronger economic base. Multichannel learning was also multipurpose learning.

Multichannel learning at the community level includes schools and other familiar educational institutions such as literacy centers, but it also includes much more. Multichannel learning includes all of those channels that educate and socialize young learners; it maintains the flow of learning opportunities for people of all ages. It has many faces, depending on the purpose, the audience, and the setting. Because it is so varied in application, its main attribute must be its flexibility.

In the future, we are likely to see a further decentralization of production, less standardization of education and learning materials, and involvement by a wider range of interest groups. Modules focused on needs common to a specific locality are already being developed by special interest groups operating in a given area, e.g., oil companies, conservation organizations, fertilizer manufacturers, and multi-donor integrated development projects. But these modules could well be developed in a way that fosters broader use without incurring the same development costs over and over again. Formats already exist that distinguish between core elements that can be used in many communities and elements that are likely to need adaptation for individual communities. A module on a given topic may look more like a smorgasbord of many ingredients from which local production units choose what they will assemble into the "meal," what they will adapt or change, and what they will create for themselves as they develop the multichannel learning materials. Local control over production and design is increased, as is the capacity to respond to local learning needs. Therein lies the power and potential of community learning channels.

Applying Multichannel Learning for EFA

8

Multichannel Learning: The Case of National Open School, India

M. Mukhopadhyay

India has more than 780,000 primary and elementary schools, 280,000 nonformal education centers, 90,000 secondary and senior secondary schools, 8,000 colleges, and 250 universities. Despite the proliferation of educational institutions, India still has very far to go in attaining quality education for all. There are problems of access, retention, and performance. Approximately 39 million school-age youth are outside the educational system. Of those who do enroll, approximately 40% leave school without completing eight years of basic education. Children are still withdrawn from school to provide family income, despite government efforts to eliminate child labor. Often women and members of rural communities face economic, cultural, and social barriers to education. In addition, a great number of people wish to work and go to school at the same time. India faces the challenge of providing appropriate educational opportunities for all of its citizens, creating a demand for educational services, and ensuring effective learning.

The Government of India, through the District Primary Education Program (DPEP), has adopted a three-channel strategy at the primary level which consists of

- formal primary education;
- nonformal primary (equivalent) education; and
- a distance education modality in primary education.

The parallel structures or provisions at the secondary level are

- formal secondary school;
- home study without attending school; and
- secondary level distance education.

This multichannel approach aims to increase participation of the largest possible number of people, including "hard to reach" populations such as women, nomadic groups, and socially and

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economically disadvantaged communities, while enriching and reinforcing learning for those who enter any one of the educational channels.

National Open School of India

National Open School, India (NOS) was conceptualized and established in 1989 to provide alternative schooling to those who cannot attend schools. Its mission is to provide education for all and to achieve equity and social justice. Because it is operating within a national context, all major committees and commissions on education have assisted in defining the role that NOS is expected to play. Through a detailed analysis of all documents on the NOS, three specific roles have been identified: as a delivery mechanism, as a national resource agency to facilitate the emergence of an open school system, and as an international forum for sharing experience and expertise to support developing countries.

In keeping with its mission, NOS offers a variety of programs. These are primary, elementary, secondary, senior secondary, and vocational education, as well as life enrichment programs (see Figure 1).

The secondary and senior secondary programs lead to Grade 10 and Grade 12 certificates recognized by government and other employment agencies, as well as universities for higher studies.

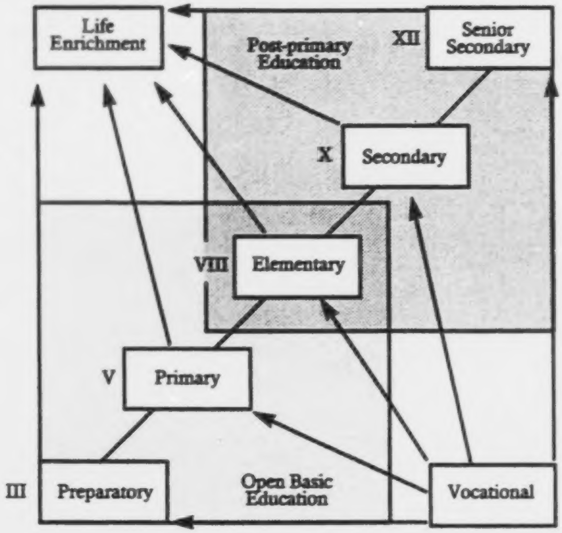

Figure 1. The programs offered by National Open School and their interlinkages

NOS programs are quite flexible. Students are offered a choice of subjects at the secondary and senior secondary levels. Compared to the subjects available in comparable grades in formal education, NOS offers some upper level courses in unconventional subjects. A student is free to choose any combination of subjects without restrictions. The only requirement is one for language study. Breaking away from the conventional routine, a student in the secondary level can choose home science and business studies, in addition to mathematics, science, English, social studies, or bakery and confectionery. At the senior secondary level, a student may choose subjects, such as political science, chemistry, or furniture and cabinet making. Students can also learn at their own pace. Enrollment at each level is valid for five years. Hence, a student can take full advantage of the time period. Examinations are given every six months with the option of credit accumulation. This means that students can take examinations in one or more subjects at a time and accumulate credits or improve credits until they complete the course requirements leading to certification.

While NOS offers flexibility in the choice of subjects and the length of study, it maintains a rigorous quality control of the curriculum, instructional materials, and examinations. Examinations use several types of questioning: objective, very short answer, short answer, and short essay questions, as well as practicals and oral examinations developed on the basis of a guide. The strict quality control has paid rich dividends to NOS. The senior secondary certificates are recognized for admission to higher levels of education by more than 70 universities throughout the country, including the prestigious Indian Institutes of Technology.

Enrollment in NOS began in 1990. To date, NOS has enrolled more than 260,000 students. Approximately 70,000 have graduated during the last five years. The flexibility of its programs has given NOS the distinction of attracting more than 63% of its total enrollment from educationally marginalized groups—about 38% women and girls and 25% scheduled castes, scheduled tribes, and handicapped persons. Since there is no upper age limit for admission, NOS may cater to one of the widest range of age groups found anywhere in the world. The youngest student at NOS is 14 years old, and the oldest is 76 years old. A large majority of the students come from poor socioeconomic backgrounds, and more than 30% are working people. There is a steady growth in student enrollment at NOS; in 1994, 70,000 students enrolled in the program.

Aside from its role as a delivery mechanism, NOS is also called upon to play a leading role in the development of open learning systems throughout the country. NOS is actively engaged in a dialogue with the Indian state governments to set up state open schools. In such endeavors, the NOS provides the necessary technical and professional support in project design, sharing instructional material, training personnel, curriculum development, and so forth. Three state open schools have already been established, and project reports have been finalized for three additional open schools. More and more states are coming forward to reach the target network of 20 open schools and to serve the learning needs of about 40 million people in 10 years using 17 different languages.

Among developing countries, India possesses significant experience in open schooling. It has indicated its willingness through the Joint Initiative on Distance Education in the Delhi Declaration (1993) to share its experience and expertise with other developing and semi-developed countries. Participants in study visits to the open school system of India have included Brazil, China, Egypt, Indonesia, Mexico, Nigeria, and Pakistan.

Multichannel Learning

Multichannel learning has been defined and described effectively by the International Multichannel Action Group for Education and some of the other authors in this volume. Drawing from descriptions of multichannel learning, the goal of NOS is to provide more than one path of learning to complement and reinforce learning. Sometimes paths of learning are alternatives and sometimes they are complementary to one another. Paths or channels are used for more than one purpose, and in more than one format. Within the overall instructional design there are five learning channels, starting with the establishment of the mind-set of an open scholar. Multichannel learning in NOS, as it exists and as it is emerging, is presented in Figure 2. I shall, at the outset, describe the five major channels used by students, followed by a backup channel for capacity building of teachers, counselors, managers, and so forth.

Establishing the Mind-Set of a Scholar

Since the students in NOS are school dropouts, a majority of them have negative self-images as scholars, particularly due to earlier experiences with formal education. Hence, multichannel learning in NOS seeks to serve the affective and cognitive needs of the students. One of the major concerns is to build a sense of pride in the programs and material offered by NOS, and to instill a sense of confidence among the open learners.

Two different kinds of educational materials are used to develop a positive student mind-set. These are *1*) a prospectus and *2*) an introductory document called "Open Schooling—How to make best use of...."

The prospectus introduces NOS, its programs, the curriculum, the courses, and the examination system. It also provides detailed information on various universities and other institutions of formal learning that recognize NOS certificates. The application form in the prospectus includes information on the socioeconomic background of students. Since the prospectus is introductory literature, it is carefully designed and presented with four-color illustrations laid out and printed on quality paper. In other words, the prospectus is the first demonstration of the quality and high standards maintained by NOS.

The second important piece of material is titled "Open Schooling—How to make best use of..." This brochure introduces the student to the NOS and the process of human learning. It provides information on how to use printed self-instructional material, audio and video material, and personal contact classes, as well as how to learn from environmental resources and take examinations. Formal education stresses teacher-directed instruction, whereas in the open learning system, students are expected to be self-learners. This particular piece of material introduces students to the

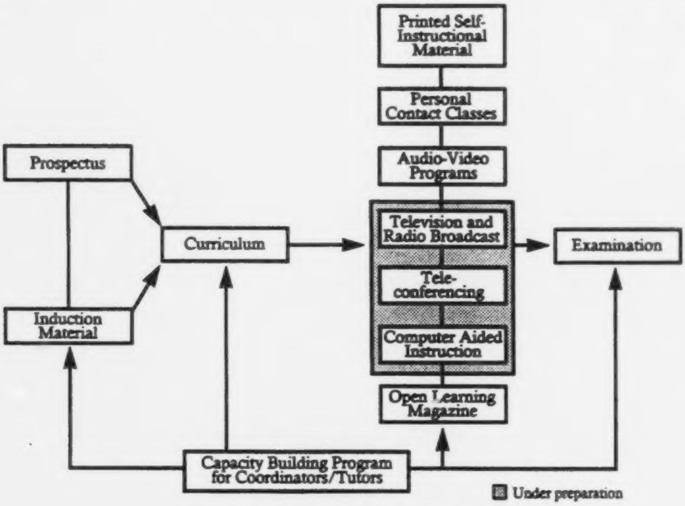

Figure 2. Multichannel learning in NOS

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process of self-learning and how to use the various channels of learning in an open learning institution, simultaneously boosting their confidence. Once again, special care is taken in designing, illustrating, and printing the material. This document is provided to the student immediately upon admission.

Printed Self-Instructional Material

Print media is by far the most dominant channel of learning in NOS. NOS has developed its own curriculum and study material. The curriculum is developed by committees of subject experts, subject educational technologists, and curriculum planners. The curriculum is subsequently converted into self-instructional modules. Each module consists of an introduction or an overview occasionally supplemented by a concept map, a statement of objectives in behavioral terms, and a presentation of the main text in smaller portions (not in small Skinnerian frames). Each portion is followed by questions in the text to enable students to check their own progress. The modules end with a lesson summary and final exercises. Because of its self-instructional style, the material is often called "the teacher in print." The materials are written in dialogue and printed in large type fonts with wide margins for note taking. Often distance education materials are poorly printed to cut down on cost; however, NOS strives to produce learning material that is not only pedagogically sound but also attractive. As mentioned earlier, there is a wide age range among students. At the secondary and senior levels students also vary widely in their vocabulary skills and learning styles. Despite limitations and difficulty in developing material for such a wide range of learners, special effort is made to maintain relevance to learners. For example, language courses include two modules that are purely studio-based and designed to develop the listening and speaking skills of the students.

Personal Contact Classes

Another component of multichannel learning is the personal contact program. NOS offers 30 theory classes per subject. Practical classes are held separately. The main objective of the contact class is to have tutors and counselors clarify the points and questions students are not able to resolve on their own, after they have received grades on the self-instructional materials.

Two problems negatively impact the effectiveness of the personal contact program. First, the students, in particular the working ones, find it difficult to attend the contact classes. Second, since the tutors are from conventional schools, they are not trained in or familiar with cooperative learning, problem solving, or tutorials. Hence, they tend to resort to a lecture format. It becomes counterproductive to have 30 lectures in a subject that normally requires more than 200 in the formal school system.

NOS produces or procures audio-video programs that correspond to a topic in the curriculum and can be used *1*) in lieu of the printed study material (stand-alone); *2*) in conjunction with printed self-instructional materials, more as a supplement to reinforce learning; or *3*) for conducting tutorials. The audio-video programs are not incorporated in the self-instructional materials.

Audio-video support for learning began about two years ago. NOS has made it a policy to explore various kinds of electronic media. NOS has approached authorities within the Government of India to provide broadcast time on radio and television.

NOS established a modest facility for developing digitized multimedia software that can be used on an IBM-compatible personal computer. With video graphics and sound blasters, it will be of a comparable quality to video programs and cheaper to produce. The Government of India has been providing five to eight IBM-compatible personal computers to all senior secondary schools (about 15,000), of which nearly 4,000 have already been equipped. Thus the user network is already being put in place. Using multimedia software will not be very difficult.

To further enhance its effectiveness, NOS has decided to introduce a teleconferencing facility. The pilot experiment-cum-demonstration has been conducted successfully and has equipped selected study centers with two-way audio, one-way video facilities.

Open Learning—A Bimonthly Magazine

NOS provides to each of its students with a bimonthly magazine called *Open Learning*. Whereas the print material, personal contact classes, and audio-video programs provide curriculum-based learning, the purpose of *Open Learning* is twofold. First, it provides certain practical guidelines to the students in preparing for specific subject-oriented questions and requests a response to the questions. Second, it provides general educational information, particularly regarding career opportunities and socially relevant issues. The magazine contains a series of continuing features on gender equity and care for the girl child, environmental awareness, AIDS awareness, population and quality of life, and information science. The magazine also contains articles on personality development and career opportunities for non-graduates. This experiment has only recently been undertaken and as a result, only three issues have been circulated. But since it is provided to every student, its circulation is more than 100,000. *Open Learning* is quite popular among the students. This is evidenced by letters to the editorial section that provide the magazine with a forum for interactive dialogue with readers.

Capacity Building Through the Development of Human Resources

The five channels of learning mentioned above are supported by the Human Resource Development Project of NOS. One program has been introduced for the coordinators, the principal or vice-principals of the formal school(s) who manage the study centers. In order to orient them to the needs of open learners, the program for coordinators includes the following three modules on

- philosophy and practice in open schooling,
- the interactive instructional process in open schooling, and
- management of study centers.

A separate program has been designed for the tutors/counselors. The main objective of this program is to enable tutors to help the students make the best use of multichannel learning. The training program for tutors and counselors includes modules on

- introduction to NOS,
- cooperative learning,
- problem solving,
- using audio and video programs in the classroom,
- transactions,
- interactive learning,
- simulation and case studies, and
- communication methodologies.

The design of the program and instructional material have just been developed. It is still in the process of being edited and finalized. This program should be ready by mid-1995.

NOS Achievements

The effects of multichannel learning can be assessed for both qualitative and quantitative growth. The issue of quantitative achievement should be viewed from the perspective of achieving equity and social justice, which is the stated mission of NOS, along with the education for all. Few girls and people from socioeconomically disadvantaged communities participate in conventional schooling. In the formal system girls account for less than 26% of total enrollment. In equivalent grades in NOS, girls and women are about 38% of total enrollment. Furthermore, it is among the girls and women that age varies most widely. A large number of female students are in the senior age group. Similarly, the scheduled castes and the scheduled tribes that are identified as socioeconomically disadvantaged communities in the Indian Constitution account for nearly 25% of the total enrollment in NOS. This is significantly higher than the enrollment of this category of students in general education. Together, marginalized groups share 63% of total enrollment in NOS. Encouraged by the participation of marginalized groups in the secondary and senior secondary programs, and with the aim of helping achieve basic education for all, NOS has designed a basic education program using similar multichannel learning techniques. This has brought NOS and its programs closer to adult literacy and post-literacy programs.

The DPEP, which is exclusively focused on primary education, is also linking up with the open basic education program. Similar educational schemes, such as nonformal education and the education for rehabilitation of child labor, are other areas with close linkages to NOS.

It is important to note that along with the multichannel learning option, marginalized groups pay reduced program fees. In addition to the program flexibility in allowing for ample time to pass examinations, the credit accumulation system also encourages marginalized groups to participate in a wider variety of NOS programs.

The emphasis on multichannel learning, as well as program flexibility, has made NOS programs quite popular. This has spurred growing enrollment during the last four years (see Figure 3).

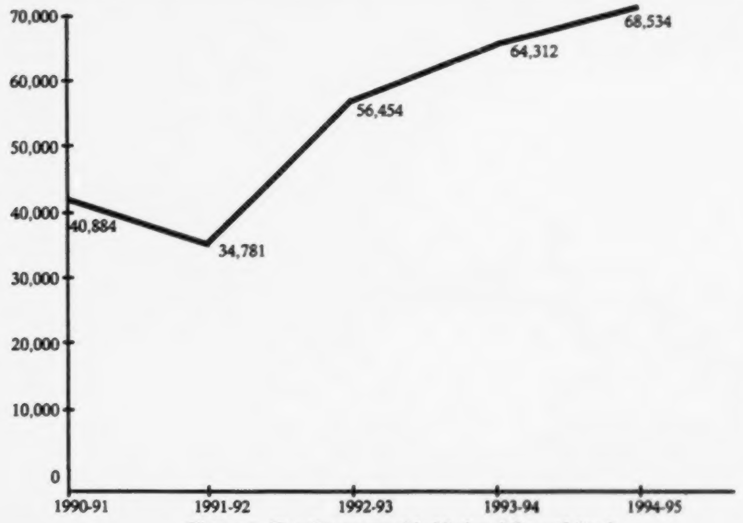

Figure 3. Enrollment trend in National Open School

There are two or three major issues in terms of the qualitative impact of multichannel learning along with the curriculum and examinations. The Union Government of India authorized NOS to conduct examinations and certify students at the secondary and senior secondary levels. The validity of NOS exams and certificates is recognized by many universities. The Indian universities and the Boards of Higher Secondary Council extend equivalence on a case-by-case basis with prior evaluation of standards. The certificate offered by NOS has been recognized by nearly 90 Boards of Senior Secondary Education and universities as an equivalent standard of examination and certification. Among the institutions of higher education, the Indian Institutes of Technology, institutes of national importance, have recognized NOS certificates. NOS students have gained admission into formal universities, medical colleges, and technical institutions despite tough competition.

Problems

Although there have been encouraging experiences using multichannel learning in open schooling, problems do exist. One of the major problems is the difficulty in conceptualizing multichannel learning and effectively incorporating this innovative approach into the organizational ethos of the school. NOS, like all open learning systems, has components that resemble an industry. The visible aspects of open school management are as follows:

- printing millions of instructional materials;
- distributing materials to 70,000 students associated with approximately 400 centers in every nook and corner of this vast country;
- organizing more than 4 million contact classes; and
- managing the budget and accounting systems of an institution worth 3.5 million dollars annually.

In the midst of these important administrative tasks, the academic component is often low priority. Furthermore, personnel in the institution tend not to be strong in abstract conceptualization. Most of the staff in the organization are involved in operation management. They tend not to be concerned with the issue of multichannel learning and the delivery system. In fact, staff is often resistant to multichannel learning because it increases the complexity of their work. Modules require complex planning to design and print the educational materials, monitor and supervise the personal contact classes, plan and produce audio and video programs with appropriate linkages to the curriculum, and so on. Often some of the components of multichannel learning remain underutilized. For example, about 40% of the students of NOS do not make use of the personal contact program at all. Similarly, an estimated 20% of students use other kinds of materials that are examination-oriented for their study, rather than the material produced by NOS. The quality of the delivery is also seriously influenced by lack of adequate resources.

More often than not, distance education is considered cheap. The concept of effectiveness is often lost sight of by administrators and funding agencies. The cost of education in NOS is approximately Rs.700, or about US$22. This includes 30-50 printed instructional materials of a volume of 3,500 to 6,000 quarter-size printed pages, 150 contact classes, access to video and audio programs at the study centers, and six issues of the fully illustrated multicolor magazine, *Open Learning*. The unit cost for these kinds of materials and programs is almost inconceivable in any of the developed countries. However, quality could significantly be improved in terms of management of the delivery system if the unit cost could be enhanced.

Although the Government of India provides significant support in the developmental stage of open schooling, NOS generates as much as 92% of its recurring costs through student fees. It offers a special concession to girls and people from disadvantaged communities to attract higher enrollment from these groups. The revenue loss for encouraging the marginalized groups is about US$330,000 annually. But NOS feels that the gains toward education for all and equality for girls and women outweigh the loss of revenue.

Another significant problem is the lack of infrastructure for broadcasting. A new institution, NOS has not yet obtained radio or television time. In the absence of broadcasting NOS depends upon modular media, which are more expensive, though flexible. The possibility of acquiring time on television or radio channels will also mean incurring additional costs for reception antennas.

The effectiveness of an open learning system depends largely upon the management of the delivery system and student support services. In order to maintain regularity and quality, it is necessary to have an adequate monitoring system. NOS operates from New Delhi with local centers spread throughout the country. The local centers are not supervised by regional or sub-regional offices. That leaves a wide gap in monitoring the implementation of carefully designed multichannel learning. This is particularly important because the coordinator of the study centers, the tutors, and the counselors are drawn from formal schools. They are not trained or oriented to the open learning system and catering to the needs of an open scholar. In the absence of monitoring and professional support to the conventional teachers and tutors, multichannel learning runs the risk of self-instructional materials being read as conventional textbooks, and tutorial and cooperative learning being converted into lectures.

There have been significant efforts to maintain standards and the equivalence of the open school program with comparable programs in the formal system. However, many people still consider open learning to be second-rate.

The vision of education for all is steadily becoming a reality. Although NOS is one of the largest open learning institutions in the world, it cannot begin to address the needs of the whole nation of India. Alternative open schooling is required for 40-50 million Indians. The needs assessment and situational analysis carried out by NOS under the overall policy of the Government of India projects the establishment of 20 open schools providing education through 16 Indian languages. Increasingly, NOS is being looked upon as a resource agency for providing professional and technical support to the emerging network of open schools.

In the future another option may be dual enrollment, where students would be able to choose between formal and open learning systems. With increased technological development in India and the supportive policies of the Government of India, the open learning system would become more actively multichannel, and television and radio broadcasts would assume a larger role. The one-way broadcast would be supplemented by interactive learning techniques through computer-aided learning and teleconferencing. The seeds of multichannel learning now sown in NOS should achieve full bloom in the not-too-distant future.

References

Biswas, G. (ed.) (1994). *Distance education in SAARC countries.* New Delhi: National Open School.

Mukhopadhyay, M. (1994). NOS: Case of an unfolding institution. In M. Mukhopadhyay and S. Philips (Eds.) *Open schooling: Selected experiences*. Vancouver Commonwealth of Learning.

National Open School. (1994). *Report on perspective review of NOS*. New Delhi: Author.

Open schooling in India: Situational analysis, needs assessment. (1994). New Delhi: Ministry of Human Resource Development, Government of India.

9

Multichannel Learning: The Philippines Experience

Minda C. Sutaria

All over the world, poor educational outcomes continue to plague the educational system. Increasing student dropout rates continue to dissipate scarce educational resources, especially in developing countries. These problems propelled SEAMEO INNOTECH (Southeast Asian Ministers of Education Organization Regional Center for Educational Innovation and Technology) to initiate the Philippines Project No Dropout Learning System for Education for All, now more popularly known as Project No Drops.

The project integrates formal, nonformal, and informal education systems with varied teaching media and strategies and opportunities for learning in a multichannel approach. One learning system with multiple delivery schemes and varied learning opportunities, this approach aims to provide access to quality basic education and to improve the internal efficiency of primary education in responding to the learning needs of students.

Funded by the International Development Research Center of Canada and UNESCO, Project No Drops is a three-year research and development project that is now at its pre-wrap-up stage. It involves six pilot schools, three located in urban areas and three located in rural areas in the major regions of the country, namely, Luzon, Visayas, and Mindanao. In the first phase of the project, a new learning system is being field tested to determine if integrating formal, nonformal, and informal education systems, utilizing distance learning strategies, and applying recent findings about teaching and student support can help eliminate the problems of a high dropout rate and low student achievement levels. In the second phase, and subject to available funding, Project No Drops will be expanded to one or two Southeast Asian countries.

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Causes of Dropping Out: Cues for Developing the Project No Drops Learning System

Students drop out for diverse reasons. One significant reason is that school is not interesting enough, i.e., there are not enough relevant, challenging, and exciting experiences to induce students to stay in school until they complete Grade 6.

In one study conducted in the Philippines, teacher behaviors that were identified as contributing to student dropout were termed "hostilities in the classroom." The list of hostilities included the teacher's unresponsiveness to the varying needs of the learners, failure to give encouraging feedback or progress reports, and lack of teaching skills or motivational teaching strategies. Multichannel learning approaches offer promising alternatives for countervailing these undesirable teacher behaviors that tend to push students away from school.

Many students drop out of school because of remoteness from school, responsibilities at home or on the farm, or lack of much-needed support from others—physical, moral, or emotional. Other reasons reported for short-term dropouts include illness, a nomadic life style, calamity, or lack of economic resources. When children affected by these factors drop out, their likelihood of experiencing success when they reenter school is nil because of the difficulty in catching up with their classmates. When they experience difficulty and do not get enough help and emotional support from either the school or the home, they tend to leave school permanently. This results in educational wastage.

If children's experience in school were interesting, rewarding, and responsive to their outside needs, fewer students would drop out. In Project No Drops, the quality of formal education, nonformal education, and informal education is enhanced as they are intertwined in a new and responsive learning system. Knitting these multiple channels of learning together with innovative teaching-learning strategies involving a variety of paths to learning—human and material—is seen as a viable way to curb dropout and to raise the quality of learning outcomes.

Primary Components of the Project No Drops Learning System: the Diagnosis and the Prevention and Cure

There are two essential components of the Project No Drops learning system, namely, the diagnosis and the prevention and cure. The diagnosis involves identifying children at risk of dropping out at an early stage, finding out why they may drop out, and determining whether they are achieving according to set standards in order to provide appropriate alternatives for raising their achievement levels and consequently encouraging them to stay in school. To identify such children, teachers at the pilot school utilized a worksheet developed for the purpose of deriving student risk profiles (see Fig. 1).

The profiles of children at risk of dropping out provided the teachers with a basis for determining and developing remedies which would encourage these children to stay in school, learn, and improve their achievement levels. The prevention and the cure consist of multichannel learning approaches designed to combat lack of interest in school, which may be the reason children are at risk of dropping out. The new learning system offers formal, nonformal, and informal education to meet the needs of all children, including those who cannot report to school regularly or are forced to leave school before completing Grade 6.

Formal Education

Project No Drops pins its faith on the formal primary school as the main vehicle for producing functionally literate citizens. If the quality of formal education is high, i.e., students are afforded opportunities for learning through multiple channels and they enjoy learning, fewer will drop out, and achievement scores will likely increase.

Since research has revealed that children who have difficulties in reading and mathematics tend to drop out of school, the curriculum of the pilot schools in three subject areas—English, Filipino, and mathematics—was strengthened through multichannel learning approaches that optimized children's participation in their learning. This was intended to raise achievement levels in these subject areas to forestall dropping out because of failure. The main thrust of formal primary education in the Project No Drops learning system is greater learning effectiveness, which is achieved by introducing strategies which make the learners more actively involved in their learning. The new learning system aims to make learning so effective and enjoyable that no one will attempt to leave school.

Pilot school teachers addressed efforts to enhance learning by employing teaching strategies that increased opportunities for student interaction, such as cooperative learning and integrative learning. Thinking and problem solving skills were developed with special attention given to children at risk so that they could improve and achieve success in school and not drop out.

PUPIL RISK PROFILE

Directions:

This form should be accomplished at the start and end of the school year.

To accomplish this form, follow the steps outlined below:

1. List all pupil's names, under the column "Name of Pupil" in alphabetical order.
2. From the pupil's Form 137-A, determine the Father's Educational Attainment and Economic Status for each pupil and code them as follows:

Code		Father's Educational Attainment
1	—	No formal education
2	—	Some elementary education or missing data
3	—	Some high school education
4	—	Some education after high school

Code		Economic Status
1	—	Poor
2	—	Low economic status or missing data
3	—	Moderate economic status
4	—	Well-off

3. For the columns "Reading Performance-English," "Reading Performance-Filipino" and "Math Performance" refer to each pupil's report card and look at his/her final rating in each of the academic subjects. Enter it in the Form using the codes below:

Code		CA-English, CA-Filipino, Mathematics Ratings
1	—	Low (less than 75 per cent)
2	—	Below average (75-79 per cent)
3	—	Average (80-85 per cent)
4	—	Above Average (more than 85 per cent)

4. For the column "Attendance," refer to the pupil's Form 137 and look for the number of days the pupil was present in school. Then enter it in the Form using the codes below:

Code		Attendance
1	—	up to 60 days
2	—	61 - 100 days
3	—	101 - 160 days
4	—	more than 160 days or missing data

5. To find the score, add the values in the six data columns. The score ranges from 6 - 24.
6. You are now ready to interpret the score and know each pupil's risk of dropping out. To do this, use the codes below:

Code	Risk	Interpretation
Score 6 - 11	Risk H	High risk of dropping out
Score 12 - 18	Risk M	Moderate risk of dropping out
Score 19 - 24	Risk L	Low risk of dropping out

Example:

Name of student	Father's Education	Economic Status	CA-English	CA-Filipino	Math	Attendance	Score	Risk
Apora, H.	1	2	2	3	2	3	13	M
Banal, L.	2	3	3	3	2	4	17	M
Cortes, A.	4	3	3	3	3	4	20	L
Cruz, F.	1	1	1	2	1	2	9.	H

For children who lagged behind, several strategies were employed. These included adoption of "buddy system" learning schemes, peer teaching/learning, and utilization of student tutors for the "catch-up" program for potential school leavers.

Two slogans were adopted by the pilot teachers: "Learning is fun" and "Sharing and caring." These slogans provided direction in management of the teaching-learning activities in and out of the classroom. Many of the teachers reported with pride that theirs was a "no-hostility classroom," meaning to say they were responsive to the unique learning needs of each child and treated each one with understanding and interest in his or her development.

As a happy consequence of adopting multichannel learning approaches for facilitating students' learning in the formal system and enhancing the learning environment in the pilot schools, early reports indicate that dropout rates have decreased in all schools. In two schools, achievement levels have significantly increased.

Nonformal Education

In the Project No Drops learning system, children who cannot remain in school because of problems that the school cannot overcome, such as a serious illness requiring prolonged absence, distance of the child's home from school, calamity, or a nomadic lifestyle, do not necessarily drop out. An alternative learning program helps them to continue learning until they return to school. Should they be forced to stay out of school permanently, the alternative delivery system can sustain them until they acquire functional literacy and are appropriately certified as having completed basic education.

The curriculum for this nonformal delivery system parallels that of the formal school and includes self-instructional materials developed and tested in other research and development projects of SEAMEO INNOTECH.

Children who intend to be temporarily absent from school for a period longer than two days inform their teacher. The teacher provides them with self-instructional modules, assignment sheets, or both. They are advised to work on them during their absence. They are encouraged to seek the help of their parents or brothers or sisters when they encounter difficulties, or they may ask their classmates or children in higher grades to tutor them if no one in the family is literate enough to guide them.

The parents are familiar with how to handle the modules, because they are oriented on their role in the new learning system, and they are keenly aware that the support that they give their children not only boosts their morale but also enhances their learning.

In the Project No Drops learning system, parents, elders, parent surrogates, and classmates are very effective channels of learning. This is why the project provided for parent orientation and training on the important roles they are expected to play in the new learning system.

Orientation and training sessions have brought parents closer to the school. In all six pilot schools of Project No Drops, parent support for the school was very evident. Pilot school teachers partly attribute the students' positive attitude toward learning to the close attachment of the student's parents to the school. Parents are effective in linking the learning channels in schools with those in the home, such as homework, discussions about the children's lessons, and sharing about activities in school. Parents and parent surrogates can be very effective agents for linking multiple channels of learning provided in school with those available in the community and at home, but unless they are made aware of their important role in this regard, they will not expend the effort to play their roles well. This is why in Project No Drops parent orientation/training is an essential component, for it helps to make the new learning system effective and sustainable.

Informal Education

Informal education consists of planned informal learning opportunities for meeting basic learning needs for survival, development, and life. The Project No Drops learning system provides opportunities for the development of knowledge, skills, attitudes, and values in the school and community through both the formal and nonformal delivery systems and insures that the children's informal learning opportunities confirm or reinforce what they have learned through the two other delivery systems.

The key to learning in informal education is maximum exposure to good models and active participation of the learner. Learning opportunities in informal education in pilot schools include activities that parents and their children get involved in together, such as helping to make the school environment more conducive to learning, assisting teachers in the school feeding program, keeping the school premises neat and clean, fund raising for school students, and managing or participating in school co-curricular activities. These include literary contests, athletic meets, save-the-earth campaigns, scouting, teachers' day, Arbor day, camps, and community celebrations.

The pilot teachers provided opportunities for parents of children enrolled in school to maximize their contribution to their children's learning by organizing school committees and encouraging parents to work with their children. Such parent-child activities served to reinforce the children's learning in and out of school and in their daily living. They proved to be cogent learning channels for developing the values of respect and love for parents, cooperation, responsibility, and self-discipline.

The learner's environment is a potent factor in children's informal education. The more relevant and wholesome the aspects of that environment are to the learners, the greater is the probability of their developing desirable values and positive attitudes. Learning channels in their environment through which the children can acquire basic knowledge, skills, and values include teachers or facilitators, other learners, family members, other people in the community, social experience, or interaction and educational materials of all kinds. Informal education channels also include the various media for conveying socially relevant messages, and these include brochures, posters, flyers, ads, magazines, newspapers, and other forms of media.

Teachers play an important role in the informal education of the learners. They must take particular care to demonstrate positive behavior. They must harness every opportunity to expose their students to wholesome media forms and other communication technology, since these are potential channels of informal education. Teachers in the six pilot schools of Project No Drops explored the possibility of developing positive values through plays, games, drama, and other novel forms that have potential for educating learners informally. They constitute effective learning channels that link the learners to knowledge, skills, and values that they need in order to be effective social beings.

Research Basis of the Project No Drops Learning System

The Project No Drops learning system borrows strategies and practices found effective in other research and development projects. For instance, the learning system has adopted the self-instructional technology, peer teaching strategies, and learning modules of SEAMEO INNOTECH's IDRC-funded research and development project, Instructional Management by Parents, Community, and Teachers (IMPACT). From the UNESCO-funded project, Parent

Learning Support System (PLSS), Project No Drops borrowed strategies for increasing student achievement through parent and community support systems. It has adopted the scheme developed in the UNESCO-funded project Learning While Absent from School (SLAC). Project SLAC demonstrated that rural children who were absent from formal classes for long periods of time because of work on the farm could be saved from dropping out through distance-type catch-up learning activities and materials.

Project No Drops adopted a programmed teaching and learning channel for students who were lagging behind in their formal program, whether they had been absent or not. This was borrowed from IMPACT. In this strategy, bright students were trained to handle lessons mediated by appropriate modules to assist students in learning what they had failed to learn because of learning difficulties or absence from class. It was observed that in programmed teaching, student interaction mediated by printed modules and managed by bright students resulted in higher levels of learning mastery.

The Project No Drops learning system can be summarized as follows:

- **Early identification**. As early as the first few weeks of school, the teacher identifies children at risk of dropping out.
- **Special attention**. Potential dropouts are given special attention so that they will experience success and not drop out.
- **New approaches to learning**. The Project No Drops learning system adopts new strategies for maximizing student participation in their learning utilizing various learning channels, e.g., cooperative learning and integrative learning.
- **Integration of varied learning channels**. The teacher integrates as many channels of learning that have potential for enhancing learning. These include formal, nonformal, and informal education, use of various educational media, opportunities for social interaction, use of human and material resources, and real life experience.
- **Strengthening reading and mathematics teaching**. The formal and nonformal curricula are fortified in reading and mathematics to forestall student difficulties in learning in these subject areas which may cause them to drop out.
- **Teacher reorientation/training**. Teachers, principals, and supervisors are trained in multichannel learning approaches, providing for interactive learning, giving appropriate feedback on

students' responses, and conducting cooperative learning and integrative learning including development of thinking skills.

- **Student support system**. The Project No Drops learning strategy builds community and parent support systems for the learners.
- **Short-term remedies to forestall dropping out**. For children at risk of dropping out because of non-school factors, immediate remedies such as meals provided at school, income-generating activities for parents, and distance education strategies are introduced.
- **Long-term alternative learning system**. Children who are absent for longer periods are shifted to a nonformal education program with a curriculum parallel to that of the formal program.
- **Accreditation**. Children in the nonformal education program have access to the Philippines Educational Placement Test (PEPT), a system for accreditation that provides a basis for reentry to the formal school or a certification that they have acquired basic education and functional literacy.
- **Opportunity and continuity**. In the new learning system, children who drop out of school may reenter school when circumstances allow. If they cannot do so, they may continue learning through the nonformal learning system and be certified in basic education and functional literacy.

Recapitulation: Project No Drops Learning System as a Multichannel Learning Approach

There could be a variety of multichannel learning approaches to achieving access equity and quality in basic education. Project No Drops may be perceived as one permutation of a multichannel learning system keyed to the needs of education systems plagued by the problems of high dropout rate and low achievement levels.

The methodology of the Project No Drops learning system for education for all includes

- a method for identifying potential dropouts;
- formal, nonformal, and informal education linked together utilizing varied educational media and teaching strategies that provide opportunities for greater student interaction in order to enhance learning;
- learning materials that develop thinking and functional literacy skills as well as the ability to learn how to learn;
- a nonformal education program for students who are temporarily absent for more than two days or who are forced by unavoidable circumstances to dropout from school. This comes complete with

self-instructional materials and a system for assisting, monitoring, evaluating, and accrediting their learning;

- a learning continuum for dropouts enrolled in the nonformal education program that is comparable to that of the formal system;
- training for parents in the new system, on how to tutor children at home, how to monitor and supervise learning, how to develop livelihood skills and income-generating projects, and how to maintain health and to achieve environmental sanitation and protection; and finally,
- a set of evaluation materials and a prototype training package for adopting or adapting the multichannel learning approach in other schools.

Conclusions

The Philippines Project No Dropout Learning System for Education for All was launched two years before the term multichannel learning was used to refer to the integration and reinforcement of formal, nonformal, and informal education through various mediators of learning—human and material—in and out of school in order to effectively achieve the goals of access, equity, and quality in basic education. Project No Drops adopted the term multichannel learning to describe its strategies and approaches only in 1993.

In 1994, the final year of the research and development project, it can be stated that multichannel learning approaches hold promise of denting the recurring problem of difficulty in achieving access, equity, and quality in basic education. Preliminary research findings confirm this. When the report on the project is finally written, teachers, school administrators, supervisors, researchers, and policy makers will be able to more clearly perceive the value of integrating and reinforcing learning channels and the effectiveness of harnessing a multiplicity of channels to meet the varying learning needs and learning styles of learners. They will also see the wisdom of effecting collaboration across fields and experiences and between the school and the home and community. While this may not be easy to achieve, it pays off well in terms of increasing the school's holding power and raising student achievement levels. Furthermore, it develops a sense of achievement on the part of the teachers and school administrators and helps to engender a feeling of success on the part of the students and pride on the part of their parents, who come to play a central role in linking learning channels with everyday life, thereby helping the school to produce educational outcomes relevant to life.

References

Anzalone, S., and Bosch, A. (1993). Multichannel learning for women and girls: The challenge for an IMAGE working group. Oslo: ICDE/IMAGE.

IMAGE. (1994). *Multichannel learning*, Oslo: ICDE/IMAGE.

Sutaria, M. C. (1993). Multichannel learning in focus: Project No Drops and a learning system for all. *Development Communication Report 82*, 7-10.

Sutaria, M. C. (1994). *The potential of multichannel learning for addressing educational needs in Southeast Asia*. Quezon City: SEAMEO INNOTECH.

10

South Africa: Designing Multichannel Options for Educational Renewal

Stuart Leigh, Gordon Naidoo, and Lebo Ramofoko

From 1992 to 1995, the South Africa Radio Learning Project (SARLP) developed a multichannel approach to ESL and math instruction at the primary school level. This approach employs classroom use of radio, audio cassettes, print, video, workshop and school-based face-to-face teacher training, and participatory evaluation techniques.

Multichannel learning denotes the coordinated use of various instructional paths and media. As a conceptual framework for design, multichannel learning demands orchestration and concerted use of human and material resources. It also implies conscious attempts at synergy between instructional inputs. In this regard, it captures a trend in certain actual activities in educational systems design in South Africa. As the concept of multichannel learning gains currency, it is also beginning to provide instructional designers with a logic to support the systematic layering of inputs and programs to reinforce and multiply benefits to students and teachers.

The design of the SARLP was a complex response to a wide range of educational deficits produced by years of structured neglect. As such, it is useful to provide some context for this discussion of one experience with multichannel learning.

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Why Multichannel Learning in South Africa?

In 1994, the new South African government inherited myriad entrenched problems in the education sector. Causes included a system of education that was deeply flawed by design. Inequities had been institutionalized. The 15 separate racially based education departments needed to be reorganized to create an efficient and equitable system. The statistics were stark. In a recent year, the spending level for black primary and secondary students was 24% of what it was for whites. For black students in farm schools, the figure was 12%. One of every five black children repeated or dropped out of school before Grade 2. Nine of every ten black children who entered primary school did not complete high school. For years, teachers had been trained teachers in antiquated "authoritative" teaching methods that often (and predictably) failed to light a spark. The system was so discredited and so politicized that teachers actively resisted principals, teachers and principals resisted inspectors, and children boycotted schools as a statement of personal integrity.

Since the national democratic elections in 1994, progressive policies long in planning have begun to take hold. Decentralization of education has resulted in nine geographically distinct provincial ministries and a central coordinating Ministry, based on the tenet of democratic and equal provisioning. This reorganization is a massive, and as yet unfinished, task. While trying to move this administrative mountain, work has accelerated on other pressing questions, such as how to

- provide the nearly 7 million black primary school children with opportunities similar to those enjoyed by white children;
- provide teachers already in the system with necessary skills;
- respond to the fact that in 1994 some 1.8 million children between the ages of 6 and 18 remained out of school;
- lure children back to schools that had been chronically short of teaching and learning materials, and where average regional pupil/teacher ratios had reached as high as 69:1;
- raise the extremely poor standards of education in farm schools;
- enable primary school students to achieve competence in a language of wider communication;
- give students competence and confidence in doing basic mathematics; and
- how to make education interesting and relevant.

Problems often have multiple causes. How can we explain the following? "In 1991 of 290,318 pupils who wrote DET school leaving exams, 392 passed maths at the higher grade with a C symbol or better." Explanations logically cite as contributing factors insufficient and outdated materials, poor and unmotivating teaching, inadequate pre-service teacher training, insufficient in-service (INSET) programs, inadequate funding, etc. However, the authors of the above statement go on to say "In classrooms across the country, in both townships and rural areas, maths and science are viewed as foreign constructs and as integral part of the structure of oppression." In short, South Africa is different from other places. Its unique history has engendered a wide-ranging critique, directing light into corners too long unlit. It acknowledges the multi-layered complexity of social problems, while seeking strategies which address them as such.

The South Africa Radio Learning Project

In early 1992, preparing to provide a future democratic government with some practical and effective options for basic education reform on a national scale, a South African NGO, the Open Learning Systems Education Trust (OLSET), with support from USAID, asked LearnTech to provide technical services in instructional design, writing, and production. OLSET was interested in applying various learning technologies, including Interactive Radio Instruction (IRI), to improve basic education in the most disadvantaged communities. The focus would be at the junior primary level in the subjects of English as a Second Language (ESL) and mathematics.

From its inception (March 1992) to date (June 1995), the SARLP has written, produced, and evaluated 130 half-hour audio and print-based lessons for Grade 1 English; 130 half-hour audio and print-based lessons linked to 130 lessons supported only by print for Grade 2 English; and a 10-week print and audiocassette-based school readiness program. Based on evaluations, revised versions of these materials were produced and redistributed in 1995. It also produced and evaluated a series of thirty 20-minute programs for Grades 3 and 4 math, each designed to accompany another 40 minutes of follow-up instruction supported only by print, as well as a separate model series of three 25-minute programs for Grade 7 math. All audio programs include integral print for students and teachers. There are also audio and video programs for teacher training.

All of this work is embedded in a flexible system of workshops and school-based support for teachers. The project also encourages reflection and professional development in teachers, principals, and project workers by engaging them in focus groups, drafting contributions to case studies, and through other participatory evaluation processes.

To date the project has reached over 35,000 students in 600 classrooms in six of the country's nine provinces. Although this is a large group, it is very small compared to the national potential envisioned. After over two years of distribution by audiocassette, SARLP began national broadcasting by FM radio in May 1995. The number of schools using IRI is expected to grow rapidly.

While specific approaches to strengthening math instruction through audio, print, and teacher training have been developed, the project has primarily dealt with designing and testing multichannel strategies for ESL. These provide the focus for this discussion.

Implications of Multichannel Learning for Instructional Design

Multichannel learning may be seen as a general attitude toward instructional design. It is inclusive. It seeks to maximize value through enlisting the support of available resources. In this sense, it begins as a simple and indefinite idea. It is a concept wide enough to accommodate almost any effective instructional activity or medium. Thus, it is appealing to eclectic designers. It is also a healthy outlook for educational planners and managers to adopt—especially those who are (or once were) specialists. This is important because it proposes that specialists consider whatever it is that they normally consign to "other education specialists' turf." Some compelling justifications for multichannel learning are as follows:

1. People learn in different ways.

A varied palette of approaches to engaging students with learning materials, teachers, social learning situations, and so forth will be more likely to include designs that reach learners through instructional approaches and learning modes that are most suited to the learners.

2. A wide range of available resources and strategies is considered.

Although use of classroom computers and television might be powerful and appropriate in some cases, they are often unavailable. With this in mind, multichannel learning incorporates the familiar concept of "appropriate technology," employing effective and affordable media that may be at hand. Thus, multichannel learning is a particularly useful framework in developing countries, where resources and media delivery modes may be restricted.

Multichannel learning can promote inventiveness and cultural relevance in educational materials. For example, in South Africa, math educators are seeking to incorporate "ethnomathematics" in schools. The mathematical patterns found in some basket weaving might be an apt subject for a field trip. Multichannel learning can thus impact on student motivation and address the affective dimensions of learning. It offers opportunities to seek resonance for formal lessons in the surrounding environment and leads to community. For example, recognizing the importance of the affective domain and of various learning styles, as well as the wealth of possible approaches available, a coherent multichannel learning approach may justify the mainstream use of media and strategies that might have formerly seemed marginal or simply been overlooked.

3. Appropriate resources are used ecologically.

If multichannel learning begins as a simple and indefinite idea, it must soon move into the specificity of implementation. Given a purpose, available resources, and imagination, one must choose how to articulate a system that is effective, attractive to participants and administrators, and cost-effective. Multichannel learning designers naturally have to contend with questions of balance, time on various tasks, sensory mode, and affective register as they pull together various strategies for improved learning. In this sense, "ecology" denotes a healthy balance in the learning environment, awareness of the developmental needs of every person in the classroom, and the roles that each may play or grow into at various times.

SARLP chose to function within certain constraints. Because radio offered a major opportunity for massive impact, outreach, and learning support and for reasons of cost, audio that could be delivered by radio was selected as a major component. Because print coupled with audio offers a much more powerful opportunity for learning, much effort went into devising attractive and effective workbooks, readers, posters, and guides. In this regard, the project incorporated certain primary features of earlier IRI. Driven by a number of forces, however, SARLP devised significant innovations in the basic design and systematic use of IRI programs.

Interactive Radio Instruction

South Africa's English In Action (EIA) took as its starting point earlier work in IRI. It may be helpful to briefly review the history of IRI. In Nicaragua in 1974, a team of educators and radio producers began to rework the way radio was used in instruction. IRI math was the result of that work. Many varied experiences with IRI have now been documented. The experiences of the Dominican Republic and Costa Rica are addressed elsewhere in this book.

It is important to note that 20 years later, IRI is no longer just one thing. Various interactive radio program designs have developed in response to the challenges posed by different subjects (math, language, science, environmental studies, health, and early childhood development). Program designs have had to respond to challenges posed by different grade levels, cultural contexts, and pedagogical frameworks. However, all IRI programs share the assumption that children do not learn very much through passive listening. Thus, programs engage students in various active learning strategies.

In Kenya, between 1980 and 1985, a series of IRI programs called English In Action was designed to teach English in Grades 1 through 3. It made use of many of the instructional principles that proved effective in Nicaragua. It promoted active learning through games, songs, and, most of all, exercises that called for frequent verbal and physical responses to questions posed by the radio voices. It provided students with feedback in the form of correct responses. It also distributed discrete learning objectives across a number of lessons. Between 1987 and 1990, the same series was adapted for use in Lesotho, where it now is now part of the official curriculum for Grades 1, 2, and 3. This adaptation included no major design changes from the original version.

By contrast, the design of South Africa's English In Action is different in very significant ways from previous interactive radio work in ESL. Because the earlier English in Action materials were available as a starting point, either for adaptation or for study prior to new development work, the new series was also called English In Action. However, the new series is based on some very new approaches.

Why a New Design for Interactive Radio Instruction for ESL?

In South Africa and elsewhere, contemporary trends in educational psychology and pedagogy have led to a rethinking of teaching practice. There is now a common thread in discussions about how to improve junior primary mathematics and language instruction. "Fundamental pedagogics," the theoretical support for authoritative and authoritarian teaching styles too often found in South African schools, has been rethought and rejected. South African educators are actively promoting learner-centered methods. Teachers are increasingly aware of the value of students working in pairs and small groups and of teachers seeing themselves as facilitators of learning. In ESL, this takes the form of communicative language teaching practice—that is, eliciting children's own knowledge, creating conditions for meaningful and natural communication, employing a wide range of activities, and situating language in the culture of the community. The theoretical underpinnings here derive from natural language acquisition theory. In mathematics instruction, strategies include investigative problem solving, cultivating multiple strategies, employing discovery approaches, and using kits of manipulable learning aids in a well-resourced classroom. Here, instruction derives from various forms of constructivism.

English In Action in South Africa: A New "Audio-Assisted Multichannel" Design

Since January 1993, thousands of South African Grade 1 and Grade 2 students and hundreds of teachers have participated in a new form of daily audio-assisted instruction in ESL.

English In Action Level 1 (EIA 1) is designed for use in Grade 1, serving as an introduction to English for children who have had no previous contact with the language. There are 130 half-hour lessons in EIA 1. However, these begin only from the first days of the second term. Many educators believe that there should be no expectation of daily formal second language teaching in the first term. Thus, adopting a flexible multichannel strategy, the project designed an EIA 1 "school readiness" kit consisting of a manual for Grade 1 teachers, print for classrooms, and an integrated audio cassette. These materials offer ideas for activities to build classroom skills, and they present participatory stories and songs to informally introduce English.

The 130 daily EIA 1 lessons are part of a system that integrates audio programs, workbooks, colorful readers, full-color posters, alphabet friezes, and other teaching aids prepared by teachers. Teachers receive comprehensive daily teacher's notes that support the audio lessons and provide ideas for further follow-up activities beyond the audio lesson. In Level 1, the teacher notes consist of ideas for activities beyond the audio lesson that the teacher may modify at her discretion.

(The term "audio" is used as an inclusive shorthand for both radio and audiocassettes. However, with the single exception of the school readiness cassette, all classroom audio programs are designed for radio-based delivery and use. They are designed to run from start to finish, without the stopping and starting cassettes allow. Of course, teachers with cassettes may stop and start programs.)

To support communicative language teaching, innovations were made in the IRI audio program designs, including

- extensive use of audio drama to present language in real life contexts;
- themes, characters, stories, and situations chosen for their relevance to the South African primary school child; and

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- extended periods of teacher-led activities that are embedded in each audio lesson.

Teacher-led activities are approximately four-minute long slots within each lesson. During these segments, the radio suggests activities that teachers may then create and use interactively with their students. Gentle music "sound beds" follow the suggestions for activities. This format provides open-ended opportunities for the teacher and students to communicate variously with each other. Teacher-led activities are designed to elicit many kinds of responses from students. Some seek to activate higher order thinking skills. Some promote physical responses. Some stimulate the use and practice of particular language functions. And some call for children to read, act, mime, draw, or write.

For Grade 2 students, there are 130 audio programs, which begin from the start of the first term. Grade 2 students also receive workbooks, but as EIA Level 2 places a greater emphasis on reading, they receive comic readers as well. (Due in part to the competitive publishing environment in South Africa, these were produced at some extra expense in color. They were very well received.) EIA 2 classrooms also receive colorful posters.

Unlike earlier IRI ESL programs, EIA 2 programs are designed around a central unfolding story. In this story, three children, Zuko, Paul, and Thembi, live adventurous lives and provide an identification point for young listeners. By using audio drama with meaningful sound effects and interesting music, language can be presented in an effective way, naturally and more meaningfully.

In response to the demands of the Grade 2 curriculum for a second period of English teaching each day, the Level 2 teacher's notes provide the teacher with information on managing a second lesson. This lesson, which follows the audio period, is structured to promote activities such as reading, writing, and comprehension. The teacher uses the earlier radio lesson as a stimulus to develop these skills.

As an element in the multichannel design, audio was felt to be a powerful, appropriate, cost-effective medium to reach many learners. Audio could expose learners to excellent models of the spoken language and to voices of different ages and gender and with different accents. It could also enrich the classroom culturally with music and support language learning through participatory songs. The South African design emphasizes teacher-led activities. An audio is used to do what it can do best while helping teachers to do what they should be better equipped to do, that is, creating activities resulting in meaningful exchange, placing language in context, and facilitating extended communication and greater understanding. To a far greater degree than in earlier IRI ESL efforts, South Africa's English In Action has addressed the issue of "classroom ecology," by balancing media-based and teacher- and student-based activities. A segment of up to 12 minutes of each 30-minute radio program consists of communicative teacher-led activities that are shaped by teachers for their particular classrooms. Furthermore, where teachers have two ESL teaching periods, the total radio program time takes up no more than 50% of available teaching time, leaving ample opportunity for teachers to practice and develop new language teaching ideas.

Multichannel Teacher Development

The program exploited various channels and opportunities for teacher development. Some involved electronic media; others used more conventional means. By relating the goals of each, benefits were amplified.

The frequent difficulty of motivating teachers to give time to in-service training without offering them tangible rewards, such as accreditation leading to a salary increment, was encountered in South Africa. Problems with audio-assisted teacher training compound difficulties in creating an effective system. It is difficult to guarantee that teachers will listen to broadcasts outside of working hours. And even with cassettes, incentives are required.

The only time that one can be certain of reaching teachers who are not directly receiving incentives is while they are at work. Because the South African version of English In Action (like its predecessor in Kenya) was conceived as a daily program to carry the core curriculum, it offered daily contact with teachers. The project seized this vital opportunity.

The audio/print teacher-led activities are a key design feature. They facilitate effective teaching and promote teacher development both during and after the radio lessons. EIA takes advantage of 65 hours of audio-based contact time with teachers to introduce them gradually to progressive and more effective teaching practices. Over the course of a year, teachers are given hundreds of ideas for communicative language teaching activities, for contextualized multilingual discussions, and for structured language exploration. The goal is to assist thousands of teachers to freely draw on their ever-increasing repertoire of language teaching skills. Teachers' creativity is welcomed and supported.

To become a more powerful means of teacher development, EIA incorporates meetings with skilled instructors and peers.

Regional workshops are held twice yearly. The first is a two-day introductory training or a one-day refresher course supported by video and audio. The second is a one-day evaluation and planning workshop. There are also monthly meetings for teachers in local sub-regions. These make greater use of peer learning, convened under the guidance of OLSET's regional coordinators. These are called teacher support groups. Teacher support groups provide opportunities to deal with specific implementation issues in this form of audio-assisted ESL, as well as other more generic issues in English language teaching. These meetings are sometimes supported by specially prepared audio and video programs.

The project attempted to build in many opportunities for teachers to reflect on their practice. The project viewed evaluation not only as an opportunity for external assessment but also as another path to learning for participants. The participatory evaluation design is discussed below.

Finally, in an effort to amplify the power of these modes of training, the project entered a collaboration with the English Language Education Trust (ELET), an NGO that offers an accreditation to teachers in its programs. The partnership involves cooperative design of teacher training modules that are supported by audio/print and meetings with trainers. This is intended to offer a more substantial teacher training program and greater learning opportunities for more highly motivated teachers. With this component more formal assignments, another channel opens.

Such a multichannel system attempted to get at teachers' chronic problems in a holistic manner. Evaluations showed that teachers felt very well served by the project. Such an approach to teacher training has great potential to stimulate lasting practical learning, especially when offered in the context of 65 hours per year of related audio-based classroom practice. Using this unique configuration, teachers who begin to gain new skills do not have to see them slowly atrophy. Whatever is learned may be maintained and deepened through practice.

Evaluation

Studies of learning outcomes, costs, and cost-effectiveness have dominated the analyses of earlier IRI projects. While the SARLP attended to these issues, the project chose to employ an evaluation design that included both independent (external) and participatory internal evaluation processes.

The instruments and processes of evaluation included

- pre-tests and post-tests: listening comprehension (EIA 1);
- pre-tests and post-tests: listening comprehension, reading, and speaking (EIA 2);
- focus groups;
- case studies; and
- qualitative interim assessments of the project (EIA 1 and 2) based on staff interviews, staff self-assessments, field observations, questionnaires to users, and video.

Because the project was in a formative period and staff were almost all very new to such work, a participatory evaluation design was used to stimulate communication and personnel development within the project. Staff need learning channels too! Project staff were asked to assist the evaluation in various ways, such as conducting field observations, collecting case study data, administering tests, and coordinating community focus group meetings. As in teacher support groups, these evaluation processes were designed to involve teachers and principals in ongoing discussion and reflection. In this way the evaluation would not only assess but also promote the development of teachers, and the community around the school (including parents and project workers). The evaluation process itself was a channel for learning.

Evaluation Results for English In Action

Results have been positive. The key summative evaluation findings for EIA 1 indicate its effectiveness with students,

- The results suggest that the English in Action (EIA 1) program was more effective than a cross-section of comparative English classes in improving receptive vocabulary of Grade 1 ESL speakers (20% greater learning gains).
- The results clearly indicate that a primary goal of the English in Action intervention was met—the development of listening skills.
- The project showed an increasing amount of improvement in post-test scores, depending on the number of lessons of the English in Action program to which students were exposed. Students who received fewer than 33 lessons improved by 6.7%; students who received between 34 and 66 lessons improved by 13%; and students who received more than 66 lessons improved by 24%.

The evaluation methods and results are discussed in detail in Leigh (1995). Interestingly, the greatest learning gain differentials (21%) were shown by students in farm schools in rural settings where school resources, support, and training have historically been weakest.

In addition to these positive statistical findings, there was strong acceptance from the user communities. The external evaluator's focus groups revealed the following:

- There is overwhelming support for OLSET on the ground—professionals, the bureaucracy, and parents (some of whom are professionals) are all agreed on the value of the project's program of English in Action Radio Learning.
- The project is succeeding to bring key groups around the core element of the program—delivering a service to make learning English and teaching a foreign language pleasurable.
- The ability of OLSET programs to build vocabulary across the curriculum is noted in all encounters with teachers.
- There is overwhelming demand that the project's program should go to scale.

As with EIA 1 in 1993, a multi-level approach to evaluation was used for EIA 2 in 1994. In addition to focus groups, case studies, and a second qualitative interim project assessment, it included paper and pencil tests examining a wider range of receptive language skills (besides listening comprehension, pre-reading and reading were tested). A separate test of speaking skills in EIA 2 and comparison classrooms was done.

In 1994 teachers began using the Level 2 programs in mid-May rather than at the beginning of the school year in January, as the design calls for. By the time of post-testing in October they had completed on average about one-third of the 130 EIA 2 lessons. In spite of this partial exposure, significantly positive test results were reported by independent evaluators. The learning gains of EIA 2 students were on average 5% greater than comparison school students on a combined test of listening and reading skills, even though students received one-third of the EIA 2 lessons.

The great majority of EIA 2 students tested were the same ones who, as EIA 1 students in 1993, demonstrated 20% higher performance than comparison students. Thus 1994 scores showed EIA 2 students starting from significantly elevated levels relative to comparison students. The 5% greater gain attributable to EIA 2 indicates that with only partial exposure EIA 2 students widened their margin of English language competence through continued participation in the program. And again, learning gains attributable to EIA 2 were strongest in rural schools.

Whereas urban project students began with average scores of

75.6% and improved by 6%, rural students began at 59.4% and improved by 24.9%, thereby reaching similar performance levels. One of the purposes of the project was to address issues of equity and access. It appears that this purpose was met. Those beginning with the least advantages derived the greatest benefits.

Support for the reading/listening test findings came from a separate test of speaking skills developed and conducted in 1994. In the rural areas children at pilot schools showed much greater gains, both in terms of fluency and variety of grammatical structures used, than those at control schools. This suggested that the program was making a significant contribution to the learning of English in environments where there were perhaps not as many opportunities to hear and interact in English as there were in the urban areas.

Finally, from case studies and focus groups, participants' own words revealed that acceptance of EIA 2 from teachers and principals was high. Independent external evaluation confirmed that "comments made by the teachers by and large indicate that involvement in the program has led to improvement in their teaching ability." As one teacher put it, "It has improved my methods of teaching. It has improved my confidence in teaching English. It has made it simple for me to communicate with the pupils."

Adaptability

Designing for learning—multichannel or otherwise—should be situation specific. What can be generalized from one project to another? Materials? Approaches to learning they embody? Design principles for materials and systems?

Former successful IRI projects for similar-aged children indicated that we might adapt such materials for use in South Africa. The experience of the project, however, showed that there were limits to the relevance of former materials, not only culturally but pedagogically. In the case of pedagogy, this owed more to time than place. The EIA materials were over 10 years old and much had changed. Still, using some of the original script segments in conjunction with newly invented forms of interactivity (teacher-led activities) to give teachers more of a role clearly resulted in powerful benefits to both students and teachers. It was both economical and effective to build on former research and adapt earlier materials for EIA 1. That the second series required a more distinct departure from the earlier design had little to do with the efficacy of the South African EIA 1 intervention and much to do with strong local reservations about certain aspects of the design.

Materials coming into South Africa were of limited use.

Materials going out may be another story. The new model appears to address issues that may have impeded acceptance of IRI elsewhere. As never before, the project was successful in terms of addressing the needs of teachers and students simultaneously. Important new ground appears to have been broken. Time will tell how appealing this approach will prove to others.

Sustainability

Institutionalization of the project by educational administrations has always been a goal. It is too early to predict to what extent the project will be absorbed and/or promoted by government. With educational decision-making decentralizing to the nine provincial Ministries of Education and Culture, there will be no single act of adoption for the entire country. As was the case in some IRI projects, there can be no single marker of success. Use at scale will be attained gradually. That the project's ESL series has been formally accepted for implementation by a number of the new provincial ministries indicates that the change process was healthy and adequate. It has been recognized that this instructional system was designed to achieve quality. At the same time, it can be effectively and flexibly adopted on a very large scale. Sustainability at scale will depend, of course, on the strength of collaborations of associated institutions, their commitment, and their skills. These and many other factors will affect government choices. Continuing "success" in market terms can never be assured, nor should it be the sole measure of the value of a system's design. Other criteria should include whether and how end users see needs being met. All indications are that students, teachers, principals, and parents see great value in the system.

A Final Note

South Africa in the early 1990s was a unique and complex setting for educational innovation and reform. The country rightfully saw itself in that way and called for inventive responses equal to its hopes and needs. SARLP chose to remain open to criticism and suggestion, pursuing a multichannel strategy to cope with complexity. By doing this, it could address a number of issues at once. It demonstrated successes with students, teachers, principals, and the wider community. In the process it won itself a place in assisting the country with its most important tasks.

11

Multichannel Approaches in the Multigrade Classroom

German Vargas

The multigrade classroom, despite all of its limitations, offers a rich learning environment that appears propitious for exploring multichannel approaches to teaching. In 1993, the Ministry of Education of Costa Rica, with the support of the LearnTech Project and Radio Nederland Training Center, launched an experimental project to improve the quality of teaching and learning offered in the country's system of multigrade schools. This experiment had two fundamental components of educational innovation: first, the educational planning and teaching practices were based on critical situations or environmental problems of the communities in which the schools were situated. Second, the design of the learning modules that were implemented in the seven schools of the project was based on a multimedia and multichannel approach. The results of this experiment were encouraging and provide lessons for future applications of multichannel approaches in the multigrade school.

The Challenge of the Multigrade Classroom

The multigrade classroom, which usually is considered to be a serious problem confronting educational systems, especially in developing countries, is in reality the only way to offer educational services to sectors of the population that otherwise would not have access to education. Unfortunately, the teaching and learning which these multigrade schools offer are often of very poor quality. This puts their graduates at a disadvantage as they continue their education or go to work.

Multigrade Schools in Costa Rica

It is clear that the conditions and characteristics of the multigrade school demand a lot more of the teacher than a traditional school. The multigrade teacher often works in isolation

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and often has to deal with a multitude of educational objectives and material. It is easy to lose focus. Teachers are sometimes observed presenting ideas and concepts on a very superficial level, because there is neither the time nor the organizational structure to give sufficient attention to students at six different grade levels. The role that the teacher plays in the multigrade school must change. The teacher cannot continue to be the only source of information and knowledge in the classroom; rather, his or her principal function should be to facilitate knowledge construction on the part of students. In other words, the teacher should continue to be an important channel leading to knowledge, but not the only channel. This adjustment in the teacher's function can only be accomplished if there is a change in the way the classroom is organized. The physical organization of the students is a key factor in promoting interaction among students and eliminating the tendency for the teacher to be the center of activity. Similarly, the physical space of the classroom must cease to be the only space for learning. Classroom walls must be broken down, and the immediate surroundings converted into a rich space for learning. At the same time, new channels to information and knowledge can be opened by including family members and community members in the learning process.

Unfortunately, these changes just described are not easy to introduce into the teaching practice of the multigrade school, given that educational practices are resistant to change and innovation. In the past, many approaches to improving multigrade teaching have not succeeded because of a failure to demonstrate to teachers that these approaches can facilitate their work. On the contrary, many of the "innovations" inside one-teacher, multigrade schools have simply overloaded teachers with administrative and bureaucratic tasks that have little effect on level of learning and have reinforced resistance to change. In the Costa Rican experiment, a deliberate attempt was made to involve teachers in fashioning the innovation and in ensuring the multichannel approach would be "teacher friendly."

In Costa Rica, 70% of all the schools in the system are staffed by one or two teachers, and more than 30% of primary school students attend schools that are multigrade.

Multigrade schools in Costa Rica face limitations. Students are often engaged in learning for much less time than students in conventional schools. A single teacher can give only a limited number of hours to his or her students. Moreover, schools are often distant from many students' homes. Students often miss school because of the need to take part in family work activities, or because of bad weather. There is also a high degree of teacher turnover, which, along with a scarcity of learning materials and the poor infrastructure of the schools, contributes to the poor quality of education.

The teacher in a one-teacher school, faced with poor infrastructure, little support, scarce teaching resources, and the social and economic limitations of the students and the community, has to fashion pedagogical practice in the best manner possible. Dealing effectively with six grades even under ideal conditions is not an easy task. A review of the teaching practices in the schools participating in the project demonstrated that it was common to channel learning solely through verbal means, that is to say, to favor reading and writing as the only method of learning. Students spend hour upon hour in copying text from the blackboard or books. Some teachers use other exercises for individual or group work, but similarly, these exercises consist of reading text and writing answers to questions prepared by the teacher.

Learning in the Costa Rican school tends to be confined within a rigid classroom setting. It is common to find students seated in rows, generally by grade, with the teacher presenting knowledge in a one-directional manner. When the teacher interacts with the children, the tendency is to ask questions that require little thinking on the part of students. There is very little interaction and exchange between the students themselves.

The need for innovation and improvement of teaching practices and learning in Costa Rican schools is clear. Nevertheless, the implementation of a multichannel approach is not easy because, as is demonstrated by the Costa Rican experience, it requires careful efforts to pull together and integrate the different components of the learning process, including the various learning channels, in such a manner that is workable in the classroom. Because successful results had been achieved previously in Costa Rica using interactive radio in environmental education, an exploration of environmental issues was used as the basis for improving teaching practices in the one-teacher school.

Adapting the Multichannel Concept for Multigrade Instruction in Costa Rica

In Costa Rica, as in other countries, many confuse the concept of multichannel learning with multimedia. Without elaborating on the distinction or arguing that one is superior, it is important to note the basic differences in approach and the way each approach assists learning.

For many years it was believed that massive incorporation of audiovisual resources would be the panacea that would improve the quality of learning in schools in Costa Rica and other developing countries. Many governments invested considerable quantities of human and financial resources to bring the so-called "audiovisual revolution" into the classroom. However, the qualitative change in what students learn has been very small—in some cases almost imperceptible. This audiovisual revolution produced little fruit, because there was too much emphasis on the media, on the apparatus itself, and not enough attention was given to the subjects being learned.

For this reason the concept of multichannel learning constitutes an advance, at least at the conceptual level. It places the emphasis on learning and on considering the diverse ways and styles in which people actually learn. It is precisely from this point of view that the multichannel concept contributed to what was achieved in Costa Rica.

The Experiment

The Costa Rican Ministry of Public Education, teachers from seven schools, Education Development Center under the LearnTech Project, and the Radio Nederland Training Center conducted a small six-month pilot program to work with teachers to develop strategies and materials in a small number of multigrade schools. Together, they conceived of, planned, and executed a pilot project between January and August 1994. The project was called *New Methodological Options for Multigrade Schools, Focused on the Environment, with Multimedia Support.*

Seven schools from diverse geographic regions were chosen to take part in the pilot project. Some 217 students, 107 boys and 110 girls, participated. All of the schools were in poor areas with environmental problems such as water pollution, deforestation, air pollution, and rapid animal extinction. The communities derive their subsistence from the land: coffee, fruit orchards, sugar cane, and bananas are major sources of income.

Prior to the experiment, it was observed that inside the multigrade classrooms, where group activity should be very important, activity was usually limited to older children helping younger ones copy text. Students rarely used the blackboard. The classroom furniture was arranged in rows, and there was little flexibility in terms of rearranging desks to facilitate group activities. The natural surroundings were not used as a resource, and topics of importance to the community such as the environment or ecology were not incorporated into the lessons. One key reason for this was that the teachers did not plan lessons in an integrated manner but usually planned each grade separately. The design of the pilot modules let teachers change their pedagogic practices to suit a multigrade environment. The teachers themselves were involved in this design process and met with the other pilot school teachers regularly to compare and share their ideas and experiences.

Distance training using audio materials was an important component of the teacher training, and the teachers were given assignments to be completed for the face-to-face study group sessions and the four workshops. Trainers also visited the teachers in their schools to get to know the classroom, the community, and the types of materials available. Trainers also helped teachers plan and adapt the national curriculum to their unique situations. The teachers said that the new types of lessons and interaction with the communities made the students more eager to learn and stimulated creativity, independence, and more critical thinking. The teachers also noted that the children were able to guide the lessons and act on their own with the help of the cassettes and books, as well as using clay and other local resources.

Each school and community proposed its own lesson modules based on the critical environmental needs of the area. From these suggestions, two themes were developed: deforestation, and environmental pollution caused by garbage (solid waste). The teachers learned how to develop the themes so that they related to the national curriculum and the communities, how to choose the media needed, orient the theme to the different age groups, plan activities appropriate for individual and group work for the different age groups and within the communities, and how to make supporting materials out of local resources. It is important to note that teachers were encouraged not to "adopt" the environmental problem with the aim of solving it but rather to raise consciousness and learn how to create a multigrade lesson plan. The goal was to make one lesson plan encompassing all the grades.

The environmental themes proposed were decided upon in meetings with the communities, parents, and students. Everyone was involved in determining what the most important problems were. Activities were chosen based upon the children's physical and mental abilities and based upon resources available to each community. Sometimes children were asked to bring in objects from home, and other times they took field trips to see the activities taking place in the communities.

For example, in the deforestation module, the subthemes differed by age: Grade 4 students analyzed deforestation as a problem caused by humans, Grade 5 students analyzed how human actions change their surroundings and then proposed ways they could participate in solutions to the problem of deforestation, and Grade 6 students discussed concrete steps that might be taken to protect and preserve the forest so that it could be part of a sustainable development plan for the community. These different subthemes also required a variety of activities. For example, students in Grades 4 and 5 listened to a story while Grade 6 students went around the school looking for forested areas. Then Grade 4 students discussed with the teacher positive and negative events that historically affected forests, Grade 5 students divided into two groups to make posters showing the consequences of cutting down the forest, and Grade 6 students in a group shared their opinions as to why there were not more forests in their community.

At the end of the pilot, the teachers were asked to fill out forms evaluating their training. All wished that it had been longer in order to have had more time to learn new multigrade techniques. They thought that the new methodology was modern, practical, and creative, and the most useful for teachers in rural areas. They felt that the trainers respected them, and, in turn, they began to realize that children are capable of acting independently and to respect their students more.

The children, for their part, said that they liked to study environmental themes, enjoyed the programs on cassette, and liked to work in groups. They also liked asking more questions in class, sharing their ideas, participating in "conversation circles," and working outside of the classroom in the surrounding areas. They thought the classes were more organized, although the teachers worked with them less and instead gave them more work to do on their own with books and other materials. More horizontal work took place (between children), and less vertical (each child relating individually to the teacher).

It is possible that the most important change which took place in the multigrade schools participating in this project was the change in the teachers themselves. From the moment that environmental themes were introduced into the community as an underpinning of teaching practice, teachers understood that their function could no longer be the same. In the first place, by organizing the class in order to achieve an inventory of environmental problems, teachers discovered that the students, from their experiences and those of their families, knew as much as or more than they did about the problems, as shown by the documents that resulted from the environmental inventory. This is perhaps not surprising, since many of the students had lived in the community far longer than their teacher. In other cases, many of the students worked on projects far from the school but that provided rich experience to draw upon. One teacher observed:

> The children seemed much more content and secure because their work had become respected and valued, but above all because their parents knew what they were doing in the school. This means that the major change that this project generated for me was to accept that it was the children who put things into action, worked, and investigated. The teacher is merely a guide, or a facilitator.

The experiment showed that interaction among the children is a valuable method of learning and teaching. Many "investigation" tasks in the community were put into practice by groups of children. In this way, these small groups, with the guidance of the teacher, succeeded in creating their own learning experiences, which they then shared with their classmates. In other words, channels of learning were provided by other children as well as by the teacher. It is possible that these experiences of child-to-child interchange are memorable and educationally significant for learning because they are presented in a language the children can identify with. The exchange among children also provides experience mixed with vivid sources of fantasy. This makes certain experiences unforgettable.

Family members also became channels for learning. Through the introduction of environmental issues, family members were able to bridge the gap separating them from their children's learning. The environmental problems of deforestation, biodiversity, energy conservation, and pollution were an integral part of the work and even the personal histories of many of the parents. When these issues were incorporated into the school dynamic, parents were able to actively participate in the learning process, as much for their children as for themselves. And as parents became channels for learning, they gained self-respect, because they perceived a significant change in their role as community leaders. In all the participating schools, a number of parents were able to come to the classroom to share their experiences with the children. The participating teachers recognized that students' learning had increased significantly due to the reinforcement parents provided at home and in the community. Here again one sees the importance of support through diverse channels of learning.

Local industry and everyday community activities were also integrated as another important channel for learning in this one-teacher, multigrade school project. Again, environmental issues served to demonstrate that these everyday activities could be an important part of the teaching/learning process. For example, in the community of La Cruz there was an old sugar cane refinery, which the school had never visited. A visit to the refinery served as a resource for learning. In an interesting development, students were observed explaining to the old *campesino* that the energy which gives the sweetness to the sugar cane comes from the sun, and that this process could be explained by photosynthesis. The children also learned from the *campesino,* who engaged students in a discussion of the advantages of using bulls as the source of driving energy instead of electric motors. This discussion helped the students understand how everything in nature is interconnected. The visit proved to be a useful learning channel because it allowed students to relate what they had learned in school to the world around them. It is possible that the ability to create relationships and to understand them in context can only be developed through real life experience with activities that exist in the surroundings of the school and that traditionally are not used as resources for learning.

Finally, traditional means of communication have to be incorporated in teaching practice to reinforce other channels of learning. In the case of the one-teacher, multigrade school project in Costa Rica, radio was used successfully as a medium of communication. Environmental education programs were used which had been developed based on the methodology of interactive radio. For schools within the radio signal area, the programs were received over the air. In all other cases cassettes were used. According to the final evaluations filled out by the teachers, radio has a big advantage in the multigrade school. Students may use it independently, permitting teachers to work with other groups while some students listen to the radio. Yet the students receive continual reinforcement and are stimulated to participate actively during the listening period. For remote rural schools, the radio programs are a source of valuable information that would otherwise be unavailable to the students and teachers.

The experiment with a multichannel approach to improving multigrade instruction in Costa Rica suggests that the multichannel approach offers a promising basis for improving the quality of teaching and learning. The multichannel approach is still an innovation that is more conceptual than practical; its principles and its philosophical base have to be challenged and put to the test by those who work in education. In the case of Costa Rican multigrade schools, the results of the experimental project point to the potential benefits of using a multichannel approach. Much has been learned, but much more remains to be learned in order to put good ideas into practice. The practical application of multichannel learning to various parts of the educational system will be a great challenge to educators everywhere.

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RADECO: From the Margins to the Mainstream

Elizabeth Goldstein and Altagracia Diaz de De Jesus

The Dominican Republic offers the world a concrete example of a country that has fashioned its own multichannel learning education experience and managed to sustain it for more than a decade. Barriers between formal and nonformal education have been broken down, and various means of informal learning have been integrated into the education strategy. RADECO (Community Educational Radio) presents an interesting case of a project that began as an alternative education intervention but eventually moved into the mainstream, to be adopted by the Ministry of Education. The public sector then invited the private sector to participate in the project, to contribute needed skills in order to increase the chances for sustainability. During the past 13 years, the prospects for sustainability have risen and fallen over time. But the result is a firmly established yet flexible multichannel learning approach. Many RADECO project graduates have gone on to continue their, education in formal schools or have found employment to help support the communities that made possible their education.

Expanding Opportunities for Quality Education in the Dominican Republic

The Dominican Republic is a developing country of 8 million inhabitants. It occupies two-thirds of the island of Hispaniola, shared with the Republic of Haiti. The Dominican Republic is divided into three regions, of which the Southwest is the least developed and populated and the most ignored. It has many immigrants and migrants from Haiti, and its children face harsh educational realities—there are too few schools and often students are very old for their grade level. The low population density makes providing traditional schools in all communities "uneconomical" in terms of the investment required.

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The educational milieu of the Dominican Republic over the past 15 years has been characterized by a search for ways to improve the accessibility and quality of its educational system, especially at the primary school level. Like many other countries, the Dominican Republic faces the question of adequate access to educational opportunities for school-aged children in remote areas. Often the costs of reaching remote areas exceed the budgets and institutional capacities of the Ministries of Education. In such cases, sacrifices in either quality or access must be made. Since 1980, educational coverage has fallen from 87% to 85% of the age group. The dropout rate has risen from 18.3% to 26.5%, and more than 25% of the population over 10 years of age is illiterate. One of the problems particular to the Dominican education system is the exceptionally low level of mathematics achievement of primary school graduates. In a study of math achievement scores of various Ibero-American countries in the mid-1980s, the Dominican Republic ranked below 20 other countries.

In order to respond to the poor quality of Dominican education and at the same time reach remote areas, a new initiative was pioneered in 1982. The goal was to bring education to children in remote communities without schools. The initiative was supported by the communities and thus was born Community Educational Radio (RADECO).

The original RADECO model was built around interactive radio instruction (IRI). An agreement between the State Secretary of Education, Fine Arts, and Religion (SEEBAC) and USAID led to the inception of an experimental project.

The administrative offices of the project were located in Barahona, a provincial capital in the Southwest region. Technical assistance lasted for four years. The still-new IRI methodology was implemented for Grades 1-4, and consisted of the following general implementation strategy. First, six low-cost, effective teaching programs using radio were developed for primary school-aged children based on the Dominican curriculum and including elements of nonformal education reflecting the nation's unique history, culture, and socioeconomic traits. In addition, radio learning centers were established with radio assistants (adults from the community to help the children as they listened to the broadcast) in remote rural areas.

The program was successful in bringing education to places that had never before had schools. It responded to the needs of the migrant Haitian population, whose children did had not previously been given the chance to learn Spanish. It was broadcast after the children had finished their daily work and were at home. Members of the communities participated in constructing the radio-school centers, and each community chose a literate member to be the "radio assistant." The program was able to unite a medium, a message, and a community in the interests of education and to draw upon local skills and initiative to provide an education for the children.

Program Design and Community Participation

The instructional design team in Barahona created 170 lessons for each of the four grade levels. Thirty minutes of language arts and 30 minutes of mathematics were broadcast every afternoon. Each grade level was designed to be completed in nine months. With a four week vacation between grades, primary school could be finished in three years and three months. Broadcasts, then as now, alternated between Grades 1 and 3 one year and Grades 2 and 4 the following year. The radio lessons had to be sufficient to stand alone because the communities had no teachers. They were designed to be accompanied by print materials used to complement each segment of the lesson. These two media together stimulated acquisition of both verbal and written skills. The written material, consisting of printed worksheets that were distributed in weekly blocks, was developed as the radio programs were being produced.

Designed as a global program to support the community as a whole, RADECO solicited community participation in many activities. The RADECO team felt that each community had a lot to offer its youth and, in turn, educated children would be able to help their communities. The communities were asked to select a community leader to serve as a radio assistant, build shelters for classrooms, and organize the children. A team of supervisors and evaluators was in permanent contact with the centers to oversee them and distribute the printed lesson worksheets. During the first two years of the project, from 1982 to 1983, the communities experimented with different ways of organizing the centers, and SEEBAC learned how to fit its goals and curriculum to interactive radio lessons and to nonformal education.

The Strategies of Sustainability

The initial strategies were developed in a few months, and the project began broadcasting in January of 1983 on a local private radio station. There was a continuous cycle of production, broadcasting, supervision, and evaluation of the programs. In 1983, language arts and math for first graders were broadcast, and then in 1984 these same subjects were continued for second graders. During this stage, the research and evaluation process was very important, as evaluation was vital to determining the feasibility of this new IRI method. An evaluation in 1984 revealed that broadcasts should include some content from areas other than Spanish and math; consequently, science that was locally relevant was integrated into the Spanish lessons.

At the end of 1985, despite a slow start caused by an economic recession, there were three times as many centers than at the beginning of the project. That year, the Dominican Republic hosted an international conference for educators to explore the possibilities of using the RADECO model in other countries. But 1986 was the crucial year for the survival of RADECO, because international funding and management ended. A new government from a new party was elected, causing a reorganization of SEEBAC. All these events combined to make one important step possible—the institutionalization of RADECO as an official program of the Secretary of Education.

SEEBAC provided office space for RADECO and built a recording studio adjacent to the offices with the first disbursement of the budget. The project was also restructured administratively. RADECO continued to receive some technical assistance from USAID projects, the last of which was the LearnTech Project. LearnTech technical assistance and information sharing gave the program continuity by keeping RADECO abreast of new interactive methodologies and integrating social marketing strategies necessary for some components to be managed by the communities.

In the 1990s, the project encountered new difficulties when funding from the Caribbean Basin Initiative PL-480 ended. This hindered plans for expanding the project, and some RADECO community centers were closed down. The project was also hurt by professionals leaving the public sector for more lucrative offers in the private sector, a nationwide problem. Fears about sustainability grew, and many questioned the government's commitment to IRI.

The circumstances under which RADECO had been institutionalized were no longer present, and it was increasingly difficult to find new strategies for strengthening and expanding the program. New strategies were not implemented sooner due to a lack of political will and a lack of coordination between the public and private sectors, both responsible for education in the Dominican Republic. RADECO began as an experimental project with defined objectives that met the socio-economic, political, and educational needs of the Dominican Republic at that time, but the country and international climate had changed since its inception.

Community educational support had begun with 24 centers in two provinces in the Southwest region. From 1984 to 1988, it grew to 87 centers in five provinces. Slowly the program was reduced by more than half because of a lack of external funding. Some of the centers were reestablished between 1992 and 1994, and there are now 55. In some communities, formal schools have replaced RADECO, but there still exists a need for radio education as an alternative to conventional schools.

In 1992, the Dominican Republic officially changed the primary school curriculum, but the RADECO lessons were not altered accordingly. Therefore, in the past few years, it has become increasingly difficult for the students attending the radio classes in the remote communities of Barahona to successfully pass the national exams. Clearly, the students are still learning invaluable skills and knowledge that they would not otherwise have access to without the programs. Last year the RADECO supervisors in Barahona tutored the Grade 4 students with the new national textbooks. But without some sort of revision the lessons will soon not be sufficient for RADECO students to enter the formal school system at the secondary school level.

Despite these difficulties, RADECO has been sustained. It has expanded and diversified in recent years as well. This is in large part due to the following reasons:

- There is still a need for equal educational opportunities in isolated communities and in urban areas.
- Radio is a wide-reaching medium, and IRI is an innovative and adaptable methodology.
- The experience acquired by the staff in the original RADECO project remained in the system, so that it was possible to start new initiatives building on these skills.
- Multichannel learning takes into account local resources and skills and combines them to provide a high-quality education that is relevant to learners.

Thus far, a few generations of Dominican primary school graduates have overcome illiteracy to join the formal work force or continue their education thanks to IRI. Although these children live in isolated, mountainous areas and must work to support their families, they gather together every afternoon to participate in a multichannel learning program. Now they are being joined by children attending conventional schools in the capital.

An Urban Experience with Multichannel Learning

In 1991, a feasibility study was conducted in the peri-urban areas of Santo Domingo to determine whether RADECO could expand coverage to urban areas as a support for teachers. The study found a high level of interest in an interactive radio series for mathematics. Later that year, a pilot math series to aid teachers in the classroom in communities around Santo Domingo was developed. The pilot project was successful not only in improving the children's learning but also helped to increase awareness of IRI among the education sector. This experience was the basis for new RADECO activities, applying IRI in a slightly different manner than previously.

In 1992, RADECO was able to renew its community work and garner more funds from the education budget. Some centers that had been closed reopened, and new centers opened in communities like the ones served in the first years of RADECO. RADECO began a new series, Aprendamos Matemática (Let's Learn Mathematics), and experimented with new strategies, such as trying to involve both state and private entities for educational efforts of different kinds.

An inter-institutional agreement gave birth to Aprendamos Matemática, a program designed to support teachers in 300 Grade 1 and 150 Grade 2 classrooms in Santo Domingo. The agreement was possible because new administrative policies went into effect that allowed shared decision-making between RADECO and EDUCA, a private sector organization that provides educational support to a group of private schools and some public schools. This shared management lets each institution contribute according to its strengths and advantages. RADECO is part of a new state structure that allows a network of managers to access the resources of the national government and technical-educational infrastructure necessary to produce educational programs. The combined strengths of the private and public educational institutions served to improve the design of the math series. Developing the new IRI series in conjunction with the national textbook served to rekindle interest in IRI and demonstrated multichannel educational alternatives that could be used to improve the quality of education.

Various experiences in interactive radio math from around the world were studied, including the Honduran Family of Numbers, to learn more about combining radio with other educational media. This series used textbooks and teaching aids in conjunction with the radio broadcasts, and the Dominican lessons were created around the use of textbooks, notebooks, and three-dimensional media. Not only are the math programs structured to take into consideration different learning styles, but they also reach multiple audiences. The new RADECO math series supports the teacher in the classroom as well. Thus it helps to improve the quality of teaching and learning in math, an area in which teachers traditionally have difficulty. The series also aims to help lower school dropout rates through new teaching methodologies and media. The teachers understand the math covered in the Grade 1 and Grade 2 curricula, but they do not always have the skills to teach it. Therefore, the radio programs have proved to be of immense help to the teachers involved in the RADECO project and to those not directly involved but who have decided to listen to the programs on their own.

One first grade teacher, Professor Santos, found that the lessons helped her work with the number of students she has in her class:

> As soon as the radio is brought to the classroom, the children are happy. They like to count a lot. Last year went very well for me. We learned how to add, subtract. The children use objects, touch things. They can visualize the colors, the shapes, the objects that surround them. They want to meet the radio characters, because they recognize their voices. They learn to count when they hear sounds, such as the whistle of a flute. I had 58 students, now I have 36, but it is not easy. But they are pleased to listen to the radio, and discover new things. I realize that radio math helps the teacher, and the teacher must be a guide in the class. Afterwards I must reinforce what they listened to on the radio. The system that is used for teaching math does not conflict with the way I taught. Last year we used abacuses to count, but it was not possible to make little groups of objects, so this year I distribute bottle tops that I keep in a bag.

Professor Rodríguez, a second grade teacher, noted that

> One of the advantages I see is the group integration. The children become more involved in the class and more involved in mathematics. They remain attentive to the radio, motivated in class. Apart from that, the activities they do, the exercises and songs let them create and imagine. They don't want class to end. When the national anthem is over, I immediately turn off the radio to reinforce, answer questions, and evaluate. When they start second grade, the subject they know best is math. In pure knowledge, they know a lot. They have a broader concept of subtraction and addition. As a beginner using this teaching method, a huge advantage is how it maintains discipline, and keeps them alert in class.

Teachers using the radio feel strongly that the radio lessons enhance the math classes and help them pedagogically. One head of pedagogical affairs noted that "the professors are very enthusiastic. The programs lift the children out of monotony.

Learning math can be very arid, but not with the programs. I learned math late, and I never liked it very much. But these children do—they listen and behave very well during the broadcasts."

Characters, Concept, and Content

The series also seeks to provide young students with an enjoyable learning environment, exploring the world of games and fantasy. *Aprendamos Matemática* is a pleasant transition between the game stage and the formal learning and knowledge construction stage. The scriptwriting team interviewed first and second grade children in public and private schools to find out their interests, likes, and dislikes in order to create dynamic characters that would appeal to this age group. They found that first grade children were attracted to adult characters with soft, soothing voices and to other children. Thus Pablo, Maria, Carlos, and Julia were created. Pablo is a married man with two children. He is 32 years old and is responsible, honorable, and polite. Maria is 28 years old and is also married with three children. She is honest, caring, and friendly. Carlos and Julia are 9 and 10 years old, respectively, and are in the fourth grade. The audience responds well to children a little older than themselves, because the characters make them feel more grown-up, and they look up to the radio children as role models. Carlos and Julia are curious, intelligent, and occasionally mischievous. Every once in a while, two neighbors pay a visit: Don Josè and Doña Ana. They are elderly and wise and have had many interesting life experiences.

The interviews with second graders showed that Dominican children of this age are fascinated with outer space and the world of fantasy. In addition to the above characters, two new ones were added: Numerín from the planet of Numerón, who came to Earth to ask for help on how to clean up his planet, and Sumayre, a young girl with special math powers. Sumayre was created to overcome stereotypes about girls not liking or doing well in math. Janet Altagrácia Fernández Silberio, a second grade student, said "I like to line up objects and sing. I like to learn about Pablo and María. They are nice. I like to learn addition best. I know how to do my numbers up to 100."

Creating these characters required a well-planned instructional design that could integrate interactive radio and other learning channels. This was guided by a precise master plan. The master plans for the Honduran "Family of Numbers" and the original RADECO math series were combined with the new Dominican curriculum and the official textbook to create the entire instructional design and a new master plan for the *Aprendamos Matemática* series. The math content selected from these sources was arranged sequentially for the different grade levels, as were the guidelines for integrating radio and the other learning channels.

The instructional design includes diagrams to visually describe the logical-mathematical processes required in each content area; general objectives; basic math principles; directions for using the textbook, workbook, objects, and other media; and a teacher's guide.

The master plan contains the general information necessary to implement the program, including content and sequence, weekly plans of action, lesson plans, and radio scripts.

Using radio in the classroom was certainly novel in formal schools in the Dominican Republic, but it proved to be educationally sound. It allowed math content to be standardized, circumventing problems individual teachers might have in teaching certain concepts and encouraging them to augment their own knowledge in a disciplined, precise fashion. Teachers can also devote more individual attention to a greater number of students while the radio programs are in progress. The major features of IRI—distributed learning, segmentation, contextual perception, questions and answers, and immediate reinforcement—are all basic elements necessary for captivating an audience and facilitating comprehension and logical reasoning.

The Textbook as a Supporting Channel

The 280 radio programs for Grade 1 and Grade 2 reinforce the official textbook. They are not self-sufficient but instead refer to the book and have the children look at a certain page or point to a particular diagram. In addition to the textbook, EDUCA gives a complementary workbook to every child in a RADECO school and to the students in schools that are not formally RADECO schools but that have asked to participate in the project. The workbook is printed with a grid that allows children to write numbers in the proper size and order, see how digits line up, and understand their value in the decimal system. The inside and outside covers are printed with information for the radio lessons: geometric shapes, unconventional measurements, colors, sizes, shadows, and digits. These illustrated pages provide valuable visual information as the children listen to the radio program.

Currently, the Dominican Secretary of Education sells textbooks to all schoolchildren, in both public and private schools. The textbooks serve to strengthen the radio lessons and make the children enthusiastic about reading by using radio's imaginative power to reinforce, bring to life, or compare the images the listeners create in their minds. Students are asked to use the textbook in observing, comparing sizes and shapes, counting, and analyzing. This stimulates their logical thinking and integrates audio and visual learning channels.

Often, the Secretary of Education does not print enough books for all the students enrolled in each grade. In many public as well as elite private schools, there is only one copy of the textbook per class. During the segments of the radio broadcast that require use of the book, the teacher must hold the book in front of the class, while the children observe and point. An unsatisfactory teaching method at best, in classes of 50 first graders it is impossible for all but the few children in the front rows to follow and understand the concepts being taught. Without the radio lessons, these children would have almost no access to quality math instruction.

Concrete Objects

Throughout the learning process, it is important to take children's developmental stages into account, when they pass from concrete, to semiconcrete, and then to abstract understandings of the world. This is applicable to the radio math lessons as well. For example, in math lessons an important channel is the use of real objects to touch and feel. Students need to manipulate the objects they count—the process of counting becomes less abstract every time the children touch one object and place it next to another. The objects used depends on the availability of resources and the creativity of the teachers and students. If the teacher asks the students to bring in objects, they can work with a variety of things: seeds, pebbles, sticks, even mints. Using local objects allows the children and teacher to identify the content more with their own surroundings. It also shows them that active learning does not require fancy equipment.

One of the objectives of the series is to integrate three-dimensional objects into the lessons as another learning channel, especially for volume and depth. However, since every school might not have access to this type of material, and it tends to be more expensive, it was included as an optional exercise. Teachers can use differently shaped blocks and a teaching aid called the *Multioperatorio* when appropriate. Currently, only a small number of RADECO schools have been able to purchase the *Multioperatorio*.

The *Multioperatorio*, invented by mathematician Margarita Luciano López, is an instructional medium designed for teaching mathematics. It is made up of a geoplane, square pieces, triangular pieces, and cubes. By arranging and rearranging the pieces in certain patterns it is possible to gain a concrete understanding of abstract mathematical reasoning. The children are able to "touch" and "feel" concepts such as spatial relationships, numerical units, ordinal numbers, and number families.

A Teacher Support Channel

It is vital to provide teachers with an orientation to the radio lessons and the suggested activities. The teacher's guide offers information about pre- and postbroadcast activities, objectives, content, and complementary materials needed for each lesson. The teacher's guide is meant to be a general guidebook. It only specifically covers lessons 1-10, but offers suggestions for how to use the radio lessons in general to the children's advantage and to the benefit of the teachers as well. One important section of the guidebook is designed to explain that the radio lessons are not meant to replace the teachers but to show them new methods for teaching math and allow them to concentrate on each child on an individual basis and provide help where it is needed. Although virtually all the teachers receive training on the radio lessons, the guidebook answers questions they might have on such diverse topics as how to change the batteries, how to use the *Multioperatorio* or the workbook, general developmental characteristics of 6-year-old children, and how to reinforce the topic learned after the broadcast.

The formative evaluation tracked the use of the guide and found that the teachers use it adequately. More importantly, teachers feel that it has something to offer them. One problem noted by the evaluation team was that some of the teachers rely exclusively on the radio programs and do not introduce any other topics after the transmission. The radio programs, however, do not cover all the curricular topics the children are expected to learn. Fractions, for example, are in the textbook but not in the radio programs. Therefore, the role of the teacher is of prime importance both during the broadcasts and afterwards, and the guide stresses this.

Quantitative Results of the Multichannel Experience

The final report of an evaluation of the Dominican experience noted that because the radio program format itself is a novelty for both students and teachers, it stimulates mathematics learning. An important aspect to consider is that the interactive methodology depends more on imagination, behavior, activities, and even rhythms than most conventional teaching. Thus it offers a variety of teaching styles for all children.

The educational benefits of the multichannel approach were reflected in a study of student performance. Some 801 students took a pre-test and post-test, 471 from an experimental group and 330 from a control group. The content of the tests was closely based on the SEEBAC curriculum. The tests were made up of multiple choice and fill-in-the-blank questions. The overall conclusion of the final report was that children who participated in the *Aprendamos Matemática* program showed a better understanding of the official math curriculum than children in control schools: the former scored an average of 73% on the post-test, while the latter scored an average of 59%. This was statistically significant at the 0.01 level.

The final report also revealed that performance differed depending on the individual topic. The experimental group (children in the *Aprendamos Matemática* program) answered more questions correctly in every topic except fractions, in which the experimental group had an average of 25.7% and the control group an average of 32.7%. These are very low averages for both groups, but it is interesting to note that this topic was not covered by the radio lessons. Teachers were supposed to teach this on their own, after the broadcasts. There were only two other topics in which the experimental group had an average score below 60 points, although above the average of the control group: counting in tens, and ordinal numbers. The control group had an average score below 60 points on 60% of the topics.

Multi-Audience Support Programs

RADECO also produces a daily radio show for elementary school teachers participating in SEEBAC training. Teachers listen to the programs at home and attend a class at a local college or university. The program is called Educational Horizons and is broadcast on seven stations. The programs are designed to increase the teachers' general knowledge of subjects not directly part of the school curriculum. Topics have included the history of mathematics, the history of art, weather phenomena, and the *mestizaje* of the Dominican people. Although the series does not use the standard IRI methodology, the teachers are given an assignment at the end of each lesson and are asked to bring these to class and send them into the radio station. In a later broadcast, the teachers who sent in their homework are acknowledged on the air, and one assignment well done is read aloud. The response level has been very positive, and stacks of letters and assignments arrive at the RADECO offices every week.

Politically and administratively, one of the greatest achievements of 1994 was the acquisition of a radio station donated by the Taiwanese Embassy in the Dominican Republic. SEEBAC granted the station, RED (Dominican Radio Education), new and larger facilities, which include space for the RADECO offices. Operating the new station is an administrative, educational, and financial challenge. It opens the door to the possibility of other educational programming which, when integrated into the formal educational system, may provide the foundation for improved national development and the growth of human potential. The new RED, already established and transmitting programs, may also encourage other groups both in the Dominican Republic and outside to take advantage of the potential of radio for educational purposes. There appear to be the beginnings of interest in using IRI for new applications and new subjects. What this means for the future of RADECO only time will tell, but the feeling is one of optimism.

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